August 19, 2009

Mr. Dan McCaskill, CIH
BNSF Railway Company
2600 Lou Menk Drive
Fort Worth, TX 76161

Re: BNSF Personnel OSHA Exposure Sampling Report
BNSF Kootenai River Subdivision- Mileposts 1307 to 1341
EPA Operable Unit 6
May 19-22, 2009
EMR Project No. 5539.130

Dear Mr. McCaskill:

EMR, Inc. (EMR) was contracted by the BNSF Railway Company (BNSF) to conduct Occupational Safety and Health Administration (OSHA) Asbestos Exposure Sampling on a BNSF Super Surfacing Gang conducting track alignment and ballast maintenance. The maintenance work and associated sampling occurred along select portions of the BNSF right-of-way located between BNSF Milepost (MP) 1307 and MP 1341. These locations are within the United States Environmental Protection Agency (EPA)-defined Operable Unit 6 (OU6). OU6 is the designation for BNSF-owned property that may have been impacted by the loading and hauling of asbestos contaminated vermiculite. OU6 is roughly centered on Libby, Montana (MP 1319.5) and extends east to approximately MP 1301 and west to approximately MP 1341 (Figure 1).

Potential worker hazards within OU6 consist of the disturbance of previously-deposited tremolite and related mineral fibers during rail maintenance activities. Asbestos fibers within the track structure are associated with rail transport of W.R. Grace vermiculite ore or processed Zonolite shipped on this line through approximately 1990, the date of the mine closure.

The primary purpose of this OSHA Exposure Sampling event was to gather sufficient and representative air quality data to determine whether asbestos fiber releases were being created by track maintenance activities. This data allows BNSF Industrial Hygiene to determine worker exposure risk and whether current engineering controls and prescribed personal protective equipment are sufficient to protect BNSF workers. A secondary function of this sampling event was to collect limited air quality data from near the BNSF property boundary (property boundary samples). In the event that maintenance activities did create a fiber release, this data would be used to determine whether the release could impact off-site receptors.

ON-SITE PERSONNEL

A two person team consisting of EMR employees David Welch and Mike McKay were mobilized to the Site to conduct the sampling effort. Dan McCaskill, Manager Industrial Hygiene, was also present during the first two days of the event to monitor sampling activities and BNSF work practices. No EPA or CDM personnel were present at any time during sampling activities.

SAMPLING OVERVIEW

EMR mobilized to Libby, Montana on May 18, 2009, sampling commenced on May 19 and continued through May 22, 2009. Sampling efforts focused on air quality during work conducted by BNSF's Super Surfacing Gang – SC30. The gang consisted of two machines; 1) a production tamper; and 2) profiler/broom machine. The production tamper uses hydraulically

powered vibrators to force ballast under the ties to vertically align the track surface. The profiler and broom machine is used to properly reshape the ballast and remove any excess ballast from the top of the track structure. The production tamper can typically accomplish its tasks in one pass over a length of track, covering approximately 1 mile each hour. However, the profiler/broom machine often requires several passes over a given length of track and thus typically covers a less than 1 mile each hour. Both machines have a crew of three people that consist of two operators and one profiler. A total of six personal samples were collected each day of the sampling event.

Two types of samples were collected during the program: personal air samples of BNSF SC-30 personnel and property boundary air samples collected adjacent to the SC-30 gang work areas. The methods and equipment used to collect these samples is discussed below.

SAMPLING METHODS AND EQUIPMENT

Personal Air Sample Collection

The personal air sampling program utilized Gillian BDX II personal air pumps with flow rates varying from 2.3 L/m to 3.0 L/m. Flow rates were checked at the beginning and end of the sampling period with a calibrated rotameter. The pumps were equipped with Zefon 25mm Phase Contrast Microscopy (PCM) cassettes and 0.8 µm Mixed Cellulose Ester (MCE) filters, which were utilized for both PCM analysis by NIOSH 7400 and Transmission Electron Microscopy (TEM) analysis by Asbestos Hazard Emergency Response Act (AHERA) methods. EMR attempted to perform PCM analysis, but due to filter overloading PCM analysis was not possible. All samples were submitted for AHERA TEM analysis by EMSL Analytical Inc.'s (EMSL) Libby, Montana laboratory. A total of six (6) personal air samples were collected on each of the sampling days (Table 1).

Property Boundary Air Sample Collection

Property boundary air samples were collected on May 19 and May 20 to evaluate air quality near the BNSF property boundary during maintenance activities. Site access issues precluded collection of property boundary samples during the remaining days of the sampling event. Three (3) of the property boundary samples were collected from fixed locations and one (1) sample was composited from several sample locations. The composite sample was moved several times to allow the machines pass the sample point multiple times. The purpose of the composite sample was to evaluate the air quality at several different locations since the machines were at a given location for only a short period of time.

Property boundary air samples were collected using EMS Megalite high-volume air pumps equipped with Zefon 25mm PCM cassettes with 0.8 µm MCE filters. The high volume air pumps were powered by portable generators. The filters were suspended approximately four (4) feet above ground surface with the filter opening facing downward to prevent the deposition of foreign material on the filter. Stationary air pumps were checked and adjusted daily to achieve flow rates between 8 and 8.5 L/m as determined with a calibrated rotameter. Property boundary samples 01A and 02A from May 19th were analyzed via Phase Contrast Microscopy (PCM) using NIOSH 7400 methods. All property boundary samples were submitted to EMSL for AHERA TEM analysis.

Blank Collection

Field blanks were collected on three of the four sampling days. The blanks were collected by opening and resealing the filter cassette under normal sampling conditions. All blanks were submitted to EMSL for TEM analysis.

AHERA TEM analytical methods were chosen since they are widely applied to determine compliance with the OSHA Permissible Exposure Limit (PEL). The AHERA TEM method simply counts the number of fibers in known sample area that are greater than 5µm in length and through visual inspection at a magnification of 20,000. As per 40 CFR Chapter I – Part 763, acceptable sensitivity for this method is no greater than 0.005 s/cc.

Due to variable levels of filter loading, many of the samples required indirect preparation to facilitate TEM analysis. Indirect and indirect ashing preparation methods were employed on three (3) and 16 samples, respectively. A brief description of each preparation process is described below.

Indirect Preparation

- Sample resuspended in 100mL particle water
- Fractions filtered (10, 15, 25 and 50mL) on 0.2 µm filter backed by 5.0 µm filter.
- Selected volume processed to grids

Indirect Preparation with Ashing

- Loose materials in cassette consolidated with overloaded filter were prepared for ashing;
- Samples placed in LFE asher until filters have been completely ashed;
- Ashed sample re-suspended in 100 mL particle water.
- Fractions filtered (10, 15, 25 and 50mL) on 0.2 µm filter backed by 5.0 µm filter.
- Selected volume processed to grids

Both indirect preparation methods require dilution that results in an increase of analytical sensitivity.

DAILY ACTIVITY

The following is a daily summary of sampling activities from May 19 to May 22, 2009. Attached are site location maps, photolog of work activities (Attachment A), air monitoring data sheets with PCM air monitoring results (Attachment B), and complete laboratory reports and chain of custody forms from EMSL (Attachment C).

May 19, 2009

Six personal air samples (01 through 06) were collected from the following BNSF personnel during their work between MP 1307 and MP 1313:

Rex Hanna	Tamper Operator	BNSF Employee #7516762
Jesus Torva	Tamper Operator	BNSF Employee #5054390
LeRoy Paulson	Tamper Operator	BNSF Employee #2514925
Duane Williams	Profiler Operator	BNSF Employee #4882486
David Castro	Profiler Operator	BNSF Employee #7503923
Keith Francis	Profiler Operator	BNSF Employee #1178722

The same personnel were sampled each subsequent day (Table 1).

This work area is between 6.5 miles and 12.5 miles east of Libby, Montana (Figure 1). All personal air samples were submitted to EMSL for TEM analysis since they were not able to be read by PCM due to filter overloading.

Property boundary sample 01A (Area Background MP 1307) is representative of background air quality at the eastern end of the work location. Property boundary sample 02A was collected from several locations where work was completed by the profiler/broom machine. Due to the limited time spent at any one location by the profiler/broom, it was decided that this sample would be moved each time the machine passed the sampler rather than sampling one pass of the machine. Both property boundary samples were analyzed using PCM and TEM methods. Field and laboratory blanks were collected and submitted for analysis.

May 20, 2009

Six personal air samples were collected during work conducted between MP 1313-1331 and submitted for TEM analysis. This work area lies from 6.5 miles east to 11.5 west of Libby, Montana. Sample labeling practices were modified to ensure the uniqueness of each sample identification. Sample identification included a “P” or “A” to signify either a personal or area (property boundary) samples, followed by the first and last initials of the person or area and ending with the sample date.

Two property boundary samples were collected at Milepost 1314.5 near an area referred to as the Bluffs. The Bluffs is the location of a former vermiculite ore load out that was served by BNSF predecessor railroads. This location was chosen for property boundary sampling due to the high likelihood of asbestos contaminated vermiculite within the track structure. The property boundary samples are representative of air quality during work by both the tamper and the profiler/broom. Both samples were submitted to EMSL for TEM analysis.

May 21, 2009

Six personal air samples were collected from BNSF personnel during their work between MP 1331 and MP 1336 and submitted for TEM analysis. This work area ranged from 11.5 miles to 16.5 miles west of Libby, Montana (Figure 1). A blank was collected and submitted for analysis.

May 22, 2009

Six personal air samples were collected from BNSF SC-30 personnel and submitted for TEM analysis. The subject work area ranged from MP 1336 to MP 1341 or approximately 1.9 miles east, to 3.1 miles west of Troy, Montana (Figure 1). A blank was collected and submitted for analysis.

SAMPLING RESULTS

The following is a discussion of the results of laboratory analysis of each sample type. Laboratory reports and chain-of-custody forms are found in Attachment C.

Personal Air Samples

A total of 24 personal air samples were collected and submitted for TEM analysis. All samples were non-detect for asbestos fibers (Table 1). Of the 24 samples, five (5) samples were directly prepared, three samples were indirectly prepared and 16 samples were indirectly prepared with ashing. The analytical sensitivity was decreased on a total of 16 samples, since the target sensitivity of 0.005 s/cc was exceeded. Sensitivity was decreased on 15 of 16 samples due to indirect ashing preparation. Sensitivity was decreased on the remaining sample due to a low sample volume.

Property Boundary Air Samples

A total of four property boundary samples were collected and analyzed. Two samples, 01A and 02A, were also read via PCM, which resulted in fiber concentrations of 0.006 f/cc and 0.014 f/cc (Table 1). Both reported concentrations are well below the OSHA PEL of 0.1 f/cc. All four property boundary samples were submitted for TEM analysis. All four samples were directly prepared, met the target sensitivity and were non-detect for asbestos (Table 1).

Blanks

A total of three field blanks and one laboratory blank were submitted for TEM analysis. All blanks were non-detect for asbestos (Table 1).

EMR sincerely appreciates the opportunity to assist you on this project. If you have any questions, please call either Dave Welch at (425) 861-4561 or me at (218) 625-2331.

Sincerely,
EMR, Inc.,

Scott Carney PG, CHMM
Project Manager

C: D. Smith – BNSF

Att: Table 1
Figure 1
Attachment A – Project Photolog
Attachment B – Air Monitoring Data Sheets
Attachment C – EMSL Laboratory Reports and Chain of Custody Forms

TABLES

Table 1. Summary of Air Sampling Results
BNSF Supersurfacing Gang SC-30
BNSF Kootenai River Subdivision
May 19-22, 2009
EMR Project #5539-130

Sample ID	Sample Date	Analysis Date	Laboratory	Analytical Method	Volume (L)	Sensitivity (S/cc)	Results (S/cc)	Personnel Name	BNSF Employee #	Task	Milepost	Preparation D/A/IA
01A	5/19/2009	5/19/2009	EMR	NIOSH 7400	1,584	NA	0.006	Stationary Air	NA	NA	1307	NA
02A	5/19/2009	5/19/2009	EMR	NIOSH 7400	1,590	NA	0.014	Stationary Air	NA	NA	1307-1313	NA
1	5/19/2009	5/27/2009	EMSL	TEM AHERA	1,584	0.007	ND	Rex Hanna	7516762	Tamper Operator	1307-1313	IA
2	5/19/2009	5/27/2009	EMSL	TEM AHERA	1,590	0.007	ND	Jesus Tovar	5054390	Tamper Operator	1307-1313	IA
3	5/19/2009	5/27/2009	EMSL	TEM AHERA	1,584	0.007	ND	LeRoy Paulson	2514925	Tamper Operator	1307-1313	IA
4	5/19/2009	5/27/2009	EMSL	TEM AHERA	1,382	0.2	ND	Duane Williams	4882486	Profiler Operator	1307-1313	IA
5	5/19/2009	5/27/2009	EMSL	TEM AHERA	1,373	0.81	ND	David Castro	7503923	Profiler Operator	1307-1313	IA
6	5/19/2009	5/27/2009	EMSL	TEM AHERA	1,300	0.85	ND	Keith Francis	1178722	Profiler Operator	1307-1313	IA
01A	5/19/2009	5/20/2009	EMSL	TEM AHERA	4,216	0.0018	ND	Stationary Air	NA	NA	1307	D
02A	5/19/2009	5/20/2009	EMSL	TEM AHERA	3,360	0.0022	ND	Stationary Air	NA	NA	1307-1313	D
03A	5/19/2009	5/20/2009	EMSL	TEM AHERA	NA	NA	ND	Field Blank	NA	NA	1307-1313	D
04A	5/19/2009	5/20/2009	EMSL	TEM AHERA	NA	NA	ND	Laboratory Blank	NA	NA	1307-1313	D
P-DC 052009	5/20/2009	5/20/2009	EMSL	TEM AHERA	1,516	0.0049	ND	David Castro	7503923	Profiler Operator	1313-1331	D
P-KF 052009	5/20/2009	5/20/2009	EMSL	TEM AHERA	1,568	0.0071	ND	Keith Francis	1178722	Profiler Operator	1313-1331	IA
P-LP 052009	5/20/2009	5/20/2009	EMSL	TEM AHERA	1,345	0.0046	ND	LeRoy Paulson	2514925	Tamper Operator	1313-1331	IA
P-DW 052009	5/20/2009	5/20/2009	EMSL	TEM AHERA	1,340	0.14	ND	Duane Williams	4882486	Profiler Operator	1313-1331	IA
P-JT 052009	5/20/2009	5/20/2009	EMSL	TEM AHERA	1,170	0.0042	ND	Jesus Tovar	5054390	Tamper Operator	1313-1331	D
P-RH-052009	5/20/2009	5/20/2009	EMSL	TEM AHERA	1,148	0.0048	ND	Rex Hanna	7516762	Tamper Operator	1313-1331	I
A-RB 052009	5/20/2009	5/20/2009	EMSL	TEM AHERA	1,560	0.0047	ND	Stationary Air	NA	NA	1314.5	D
A-BB 052009	5/20/2009	5/20/2009	EMSL	TEM AHERA	1,560	0.0047	ND	Stationary Air	NA	NA	1314.5	D
B-BK 052009	5/20/2009	5/20/2009	EMSL	TEM AHERA	NA	NA	ND	Field Blank	NA	NA	1313-1331	D
P-RH-052109	5/21/2009	6/2/2009	EMSL	TEM AHERA	1,713	0.0046	ND	Rex Hanna	7516762	Tamper Operator	1331-1336	I
P-KF 052109	5/21/2009	6/2/2009	EMSL	TEM AHERA	1,710	0.011	ND	Keith Francis	1178722	Profiler Operator	1331-1336	IA
P-JT 052109	5/21/2009	6/2/2009	EMSL	TEM AHERA	1,699	0.13	ND	Jesus Tovar	5054390	Tamper Operator	1331-1336	IA
P-LP 052109	5/21/2009	6/2/2009	EMSL	TEM AHERA	1,430	0.13	ND	LeRoy Paulson	2514925	Tamper Operator	1331-1336	IA
P-DW 052109	5/21/2009	6/2/2009	EMSL	TEM AHERA	1,418	0.13	ND	Duane Williams	4882486	Profiler Operator	1331-1336	IA
P-DC 052109	5/21/2009	6/2/2009	EMSL	TEM AHERA	1,493	0.0074	ND	David Castro	7503923	Profiler Operator	1331-1336	I
B-BK 052109	5/21/2009	6/2/2009	EMSL	TEM AHERA	NA	NA	ND	Field Blank	NA	NA	1331-1336	D
P-JT 052209	5/22/2009	6/2/2009	EMSL	TEM AHERA	613	0.0048	ND	Jesus Tovar	5054390	Tamper Operator	1336-1341	D
P-RH 052209	5/22/2009	6/2/2009	EMSL	TEM AHERA	602	0.0049	ND	Rex Hanna	7516762	Tamper Operator	1336-1341	D
P-LP 052209	5/22/2009	6/2/2009	EMSL	TEM AHERA	540	0.0055	ND	LeRoy Paulson	2514925	Tamper Operator	1336-1341	D
B-BK 052209	5/22/2009	6/2/2009	EMSL	TEM AHERA	NA	NA	ND	Field Blank	NA	NA	1336-1341	D
P-DC 052209	5/22/2009	6/2/2009	EMSL	TEM AHERA	1,288	0.022	ND	David Castro	7503923	Profiler Operator	1336-1341	IA
P-DW 052209	5/22/2009	6/2/2009	EMSL	TEM AHERA	1,103	0.025	ND	Duane Williams	4882486	Profiler Operator	1336-1341	IA
P-KF 052209	5/22/2009	6/2/2009	EMSL	TEM AHERA	1,100	0.017	ND	Keith Francis	1178722	Profiler Operator	1336-1341	IA

Preparation Notes: D = Direct Preparation, I = Indirect, IA = Indirect Ashed

ND - Not Detected

NA - Not Applicable

FIGURES

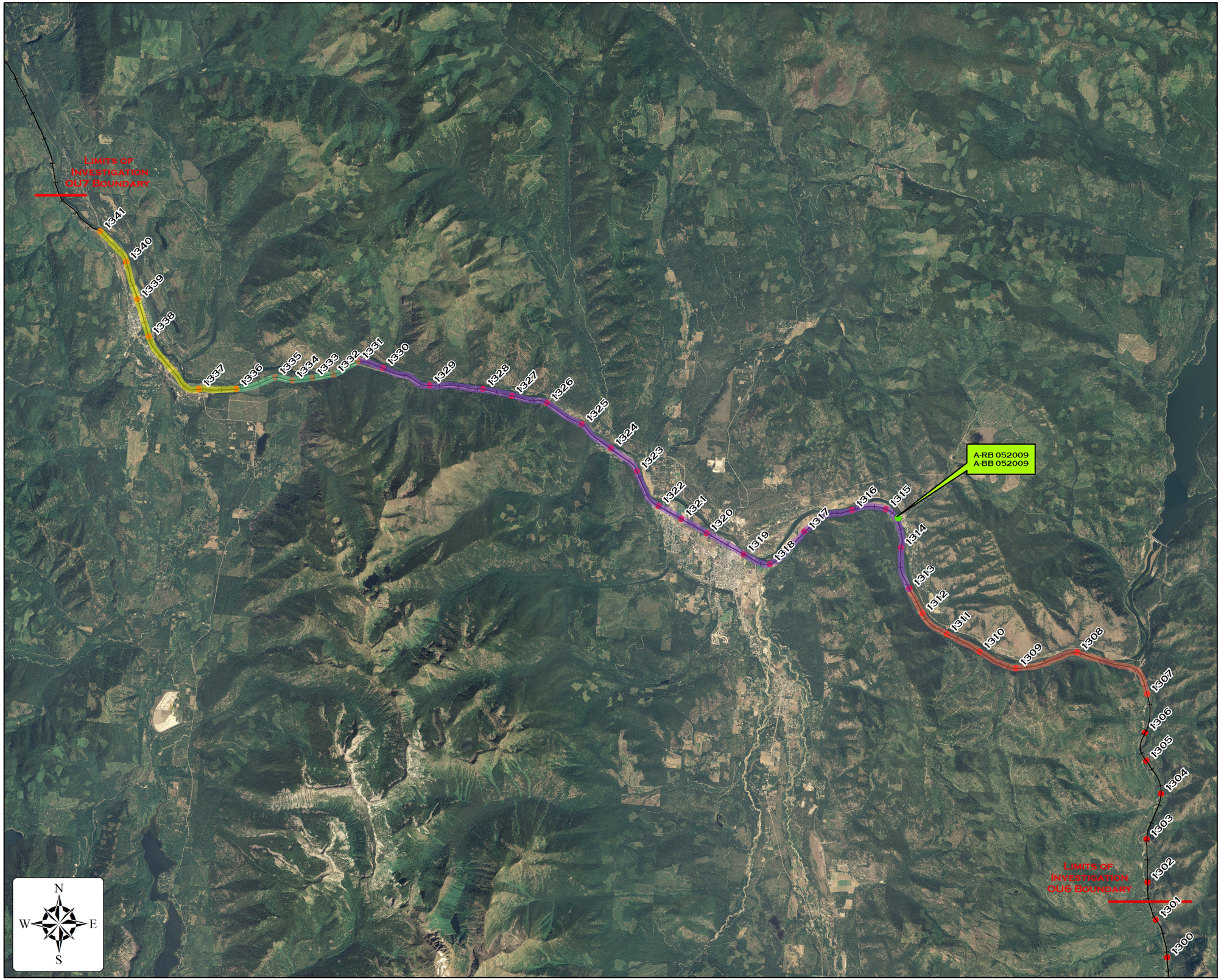

FIGURE 1
SAMPLING AREA
OVERVIEW MAP

EPA OPERABLE UNIT 6
BNSF KOOTENAI RIVER SUB

BNSF PERSONNEL OSHA
EXPOSURE SAMPLING REPORT

LEGEND

- APPROXIMATE MILEPOST LOCATIONS
- PROPERTY BOUNDARY SAMPLE LOCATION
- BNSF RAILWAY
- WORK AREA MAY 19, 2009 MP 1307-1313
- WORK AREA MAY 20, 2009 MP 1313-1331
- WORK AREA MAY 21, 2009 MP 1331-1336
- WORK AREA MAY 22, 2009 MP 1336-1341

0 6,250 12,500 25,000
SCALE IN FEET

0 2 4
SCALE IN MILES

EMR INCORPORATED

ATTACHMENT A

PROJECT PHOTOLOG

Site Name: BNSF Kootenai River Sub | **Site Location:** Libby, Montana
Date: May 19, 2008 | **Project No.:** 5539-130

Photo No.1. View of the profiler/broom machine working east of Ripley siding.

Photo No. 2 Close up view of the broom portion of the machine, east of Ripley siding.

Site Name: BNSF Kootenai River Sub **Site Location:** Libby, Montana
Date: May 20/22, 2008 **Project No.:** 5539-130

Photo No. 3 Overview of the profiler/broom machine in action passing the "Bluffs".

Photo No. 4 Overview of the profiler portion of the machine working through the "Bluffs".

Site Name: BNSF Kootenai River Sub **Site Location:** Libby, Montana
Date: May 20/22, 2008 **Project No.:** 5539-130

Photo No.5 View of the production tamper working west of Troy.

Photo No. 6 Overview of typical stationary sampling location at the Bluffs.

ATTACHMENT B

AIR MONITORING DATA SHEETS

Personal Air Sample Data
BNSF Kootenai River Subdivision
OSHA Sampling

Date: 5/19/09 Work Area Mileposts: 1307 - 1313

Sampled Person's Name:	Rex Hanna
BNSF Employee ID	7516762
Job Title	Operator
Machine Type	X5400457
Pump Number	1
Sample #	01
Starting Flow Rate	2.8
Sample Start Time	07:19
Ending Flow Rate	2.7
Sample End Time	16:55

Sampled Person's Name:	Jesus Tovra
BNSF Employee ID	5054390
Job Title	Operator
Machine Type	X5400457
Pump Number	2
Sample #	02
Starting Flow Rate	2.8
Sample Start Time	07:20
Ending Flow Rate	2.7
Sample End Time	16:58

Sampled Person's Name:	Leroy Paulson
BNSF Employee ID	2514925
Job Title	Operator
Machine Type	X5400457
Pump Number	3
Sample #	03
Starting Flow Rate	2.8
Sample Start Time	07:22
Ending Flow Rate	2.7
Sample End Time	16:58

Sampled Person's Name:	Duane Williams
BNSF Employee ID	4882486
Job Title	Operator
Machine Type	X900008
Pump Number	4
Sample #	04
Starting Flow Rate	2.4
Sample Start Time	07:23
Ending Flow Rate	2.4
Sample End Time	16:59

Personal Air Sample Data
BNSF Kootenai River Subdivision
OSHA Sampling

Date: 5/19/09 Work Area Mileposts: 1307 - 1313

Sampled Person's Name:	David Castro
BNSF Employee ID	7503923
Job Title	Profiler
Machine Type	X900008
Pump Number	5
Sample #	05
Starting Flow Rate	2.4
Sample Start Time	07:25
Ending Flow Rate	2.4
Sample End Time	16:57

Sampled Person's Name:	Keith Francis
BNSF Employee ID	1178722
Job Title	Profiler
Machine Type	X900008
Pump Number	6
Sample #	06
Starting Flow Rate	2.3
Sample Start Time	07:29
Ending Flow Rate	2.3
Sample End Time	16:54

Sampled Person's Name:	
BNSF Employee ID	
Job Title	
Machine Type	
Pump Number	
Sample #	
Starting Flow Rate	
Sample Start Time	
Ending Flow Rate	
Sample End Time	

Sampled Person's Name:	
BNSF Employee ID	
Job Title	
Machine Type	
Pump Number	
Sample #	
Starting Flow Rate	
Sample Start Time	
Ending Flow Rate	
Sample End Time	

Personal Air Sample Data
BNSF Kootenai River Subdivision
OSHA Sampling

Date: 5/19/09 Work Area Mileposts: 1307 - 1313

Sampled Person's Name:	Area Background Sample MP 1307
BNSF Employee ID	
Job Title	
Machine Type	
Pump Number	11
Sample #	01A
Starting Flow Rate	9.0
Sample Start Time	07:44
Ending Flow Rate	8.0
Sample End Time	16:00

Sampled Person's Name:	Area Mobile Pump Sample MP 1307 - 1313
BNSF Employee ID	
Job Title	
Machine Type	
Pump Number	10
Sample #	02A
Starting Flow Rate	8
Sample Start Time	08:13
Ending Flow Rate	8
Sample End Time	15:13

Sampled Person's Name:	
BNSF Employee ID	
Job Title	
Machine Type	
Pump Number	
Sample #	
Starting Flow Rate	
Sample Start Time	
Ending Flow Rate	
Sample End Time	

Sampled Person's Name:	
BNSF Employee ID	
Job Title	
Machine Type	
Pump Number	
Sample #	
Starting Flow Rate	
Sample Start Time	
Ending Flow Rate	
Sample End Time	

ASBESTOS AIR SAMPLING CHAIN-OF-CUSTODY

ENCLOSURE _____
INI-ENCLOSURE _____
NO ENCLOSURE X
GLOVEBAG _____

PASS
OR
FAIL

BLANK AVERAGE (FIBERS/100 FIELDS) 0
CLEARANCE SAMPLES _____
CLEARANCE LEVEL _____

EMR INCORPORATED
ENVIRONMENTAL MANAGEMENT RESOURCES

PROJECT NO. 5539.130
PROJECT TITLE: BNSF OSHA Air Monitoring
CLIENT: BNSF

DATE: 5/19/09
PROJ. SITE MGR.: David Welch
WORK AREA: M.P. 1307-1313

Sample Number	Pump Number	Time On	Time Off	Total Minutes	Flow Rate (l/m - avg.)	Volume (liters)	Sample Location/Description	Fibers (-blank)	Fields	Fibers/cc	TWA Fibers/cc
01A	11	07:44	16:00	496	8.5	4216	MP 1307 Area Background	51	100	0.006	
02A	10	08:13	15:13	420	8.0	3360	MP 1307-1313 Area Mobil Pump sample	98	100	0.014	
03A							Field Blank	0	100		
04A							Lab Blank	0	100		

Samples Collected By (Name/Signature): Michael McKay
Date: 5/19/09

Received by (Name/Signature): _____
Date: _____

Received by (Name/Signature): _____
Date: _____

Michael McKay
5/19/09

Turnaround Time ( ) On-site ( ) Immediate (X) 24 Hour ( ) Normal

Comments: Area monitoring For MP. 1307-1313.

Laboratory Receiving Notes: Custody Seal Intact? Y | Sample Condition: Good

BNSF OSHA Air Monitoring
PROJECT NAME

AIR SAMPLE COUNT SHEET

5539.130
PROJECT NO.

COUNTING METHOD: TALLY COUNTER

01A	5/19/09	02A	5/19/09	03A	5/19/09	04A	5/19/09
SAMPLE NO.	DATE COLLECTED	SAMPLE NO.	DATE COLLECTED	SAMPLE NO.	DATE COLLECTED	SAMPLE NO.	DATE COLLECTED
X 25mm ___ 37mm	4216 AIR VOLUME	X 25mm ___ 37mm	3360 AIR VOLUME	X 25mm ___ 37mm	___ AIR VOLUME	X 25mm ___ 37mm	___ AIR VOLUME
0.00785 FIELD AREA	0 BLANK CNT. AVG.	*0.00785* FIELD AREA	0 BLANK CNT. AVG.	*0.00785* FIELD AREA	0 BLANK CNT. AVG.	*0.00785* FIELD AREA	0 BLANK CNT. AVG.
51 FIBERS COUNTED	100 FIELDS	98 FIBERS COUNTED	100 FIELDS	0 FIBERS COUNTED	100 FIELDS	0 FIBERS COUNT	100 FIELDS
- BLANK 0		- BLANK 0		- BLANK 0		- BLANK 0	
51 TOTAL FIBERS	100 FIELDS	98 TOTAL FIBERS	100 FIELDS	0 TOTAL FIBERS	100 FIELDS	0 TOTAL FIBERS	100 FIELDS
RESULTS:		RESULTS:		RESULTS:		RESULTS:	
F/MM = ___		F/MM = ___		F/MM = ___		F/MM = ___	
F/CC = 0.006		F/CC = 0.014		F/CC = ___		F/CC = ___	
COMMENTS: ___		COMMENTS: ___		COMMENTS: BK		COMMENTS: BK	
COUNTED BY: M. McKay		COUNTED BY: M. McKay		COUNTED BY: M. McKay		COUNTED BY: M. McKay	
DATE COUNTED: 5/19/09		DATE COUNTED: 5/19/09		DATE COUNTED: 5/19/09		DATE COUNTED: 5/19/09	

Personal Air Sample Data
BNSF Kootenai River Subdivision
OSHA Sampling

Date: 5/20/09 Work Area Mileposts: MP 1313 - 1331

Sampled Person's Name:	Jesus Tovar
BNSF Employee ID	5054390
Job Title	Operator
Machine Type	J6000012
Pump Number	5
Sample #	P-JT052009
Starting Flow Rate	2.4
Sample Start Time	07:16
Ending Flow Rate	2.3
Sample End Time	15:34

Sampled Person's Name:	Rex Hanna
BNSF Employee ID	7516362
Job Title	Operator
Machine Type	J6000012
Pump Number	6
Sample #	P-RH052009
Starting Flow Rate	2.3
Sample Start Time	07:17
Ending Flow Rate	2.3
Sample End Time	15:36

Sampled Person's Name:	River Bluff along tracks MP 1318
BNSF Employee ID	
Job Title	
Machine Type	
Pump Number	10
Sample #	A-RB052009
Starting Flow Rate	8.0
Sample Start Time	09:50
Ending Flow Rate	8.0
Sample End Time	13:05

Sampled Person's Name:	Bluff Base along tracks MP 1318
BNSF Employee ID	
Job Title	
Machine Type	
Pump Number	11
Sample #	A-BB052009
Starting Flow Rate	8.0
Sample Start Time	09:51
Ending Flow Rate	8.0
Sample End Time	13:06

Personal Air Sample Data
BNSF Kootenai River Subdivision
OSHA Sampling

Date: 5/20/09 Work Area Mileposts: MP 1313 - 1331

Sampled Person's Name:	David Castro
BNSF Employee ID	7503923
Job Title	Profiler
Machine Type	9000007
Pump Number	1
Sample #	P-DC 052009
Starting Flow Rate	2.7
Sample Start Time	07:12
Ending Flow Rate	2.6
Sample End Time	16:44

Sampled Person's Name:	Keith Francis
BNSF Employee ID	1178722
Job Title	Profiler
Machine Type	9000007
Pump Number	2
Sample #	P-KF 052009
Starting Flow Rate	2.8
Sample Start Time	07:13
Ending Flow Rate	2.7
Sample End Time	16:43

Sampled Person's Name:	Leroy Paulson
BNSF Employee ID	2514925
Job Title	Operator
Machine Type	X5400457
Pump Number	3
Sample #	P-LP 052009
Starting Flow Rate	2.8
Sample Start Time	07:14
Ending Flow Rate	2.6
Sample End Time	15:32

Sampled Person's Name:	Duane Williams
BNSF Employee ID	4882486
Job Title	Profiler
Machine Type	9000007
Pump Number	4
Sample #	P-DW 052009
Starting Flow Rate	2.4
Sample Start Time	07:15
Ending Flow Rate	2.3
Sample End Time	16:45

Personal Air Sample Data
BNSF Kootenai River Subdivision
OSHA Sampling

Date: 5/20/09 Work Area Mileposts: MP 1313 - 1331

Sampled Person's Name:	Blank Field (opened)
BNSF Employee ID	
Job Title	
Machine Type	
Pump Number	
Sample #	B-BK 052009
Starting Flow Rate	
Sample Start Time	
Ending Flow Rate	
Sample End Time	

Sampled Person's Name:	
BNSF Employee ID	
Job Title	
Machine Type	
Pump Number	
Sample #	
Starting Flow Rate	
Sample Start Time	
Ending Flow Rate	
Sample End Time	

Sampled Person's Name:	
BNSF Employee ID	
Job Title	
Machine Type	
Pump Number	
Sample #	
Starting Flow Rate	
Sample Start Time	
Ending Flow Rate	
Sample End Time	

Sampled Person's Name:	
BNSF Employee ID	
Job Title	
Machine Type	
Pump Number	
Sample #	
Starting Flow Rate	
Sample Start Time	
Ending Flow Rate	
Sample End Time	

Personal Air Sample Data
BNSF Kootenai River Subdivision
OSHA Sampling

Date: 5/21/09 Work Area Mileposts: 1331 – 1336

Sampled Person's Name:	Rex Hanna
BNSF Employee ID	7516362
Job Title	Operator
Machine Type	09000007
Pump Number	1
Sample #	P-RH 052109
Starting Flow Rate	2.9
Sample Start Time	07:08
Ending Flow Rate	2.8
Sample End Time	17:09

Sampled Person's Name:	Keith Francis
BNSF Employee ID	1178722
Job Title	Operator
Machine Type	9000007
Pump Number	2
Sample #	P-KF 052109
Starting Flow Rate	2.9
Sample Start Time	07:09
Ending Flow Rate	2.8
Sample End Time	17:09

Sampled Person's Name:	Jesus Toura
BNSF Employee ID	5054390
Job Title	Operator
Machine Type	9000007
Pump Number	3
Sample #	P-JT 052109
Starting Flow Rate	2.9
Sample Start Time	07:10
Ending Flow Rate	2.8
Sample End Time	17:06

Sampled Person's Name:	Leroy Paulson
BNSF Employee ID	2514925
Job Title	Operator
Machine Type	9000007
Pump Number	4
Sample #	P-LP 052109
Starting Flow Rate	2.5
Sample Start Time	07:12
Ending Flow Rate	2.3
Sample End Time	17:08

Personal Air Sample Data
BNSF Kootenai River Subdivision
OSHA Sampling

Date: 5/21/09 Work Area Mileposts:

Sampled Person's Name:	Duane Williams
BNSF Employee ID	4882486
Job Title	Operator
Machine Type	9000008
Pump Number	5
Sample #	P-DW 052109
Starting Flow Rate	2.5
Sample Start Time	07:13
Ending Flow Rate	2.3
Sample End Time	17:04

Sampled Person's Name:	David Castro
BNSF Employee ID	7503923
Job Title	Operator
Machine Type	9000008
Pump Number	6
Sample #	P-DC · 052109
Starting Flow Rate	2.5
Sample Start Time	07:16
Ending Flow Rate	2.5
Sample End Time	17:13

Sampled Person's Name:	Blank Field (Opened)
BNSF Employee ID	
Job Title	
Machine Type	
Pump Number	
Sample #	B-BK 052109
Starting Flow Rate	
Sample Start Time	
Ending Flow Rate	
Sample End Time	

Sampled Person's Name:	
BNSF Employee ID	
Job Title	
Machine Type	
Pump Number	
Sample #	
Starting Flow Rate	
Sample Start Time	
Ending Flow Rate	
Sample End Time	

Personal Air Sample Data
BNSF Kootenai River Subdivision
OSHA Sampling

Date: 5/22/09 Work Area Mileposts: MP 1336 - 1341

Sampled Person's Name:	Jesus Tovar
BNSF Employee ID	505439
Job Title	Operator
Machine Type	09000007
Pump Number	1
Sample #	PJT 052209
Starting Flow Rate	2.8
Sample Start Time	07:08
Ending Flow Rate	2.8
Sample End Time	10:47

Sampled Person's Name:	David Castro
BNSF Employee ID	7503923
Job Title	Operator
Machine Type	90000008
Pump Number	2
Sample #	PDC. 052209
Starting Flow Rate	2.9
Sample Start Time	07:09
Ending Flow Rate	2.9
Sample End Time	14:33

Sampled Person's Name:	Rex Hanna
BNSF Employee ID	7516362
Job Title	Operator
Machine Type	90000008
Pump Number	3
Sample #	PRH 052209
Starting Flow Rate	2.8
Sample Start Time	07:10
Ending Flow Rate	2.8
Sample End Time	10:45

Sampled Person's Name:	Duane Williams
BNSF Employee ID	4882486
Job Title	Operator
Machine Type	9000008
Pump Number	4
Sample #	P 052209
Starting Flow Rate	2.5
Sample Start Time	07:11
Ending Flow Rate	2.5
Sample End Time	14:32

Personal Air Sample Data
BNSF Kootenai River Subdivision
OSHA Sampling

Date: 5/22/09 Work Area Mileposts: MP 1336-

Sampled Person's Name:	Keith Francis
BNSF Employee ID	1178722
Job Title	Operator
Machine Type	9000007
Pump Number	5
Sample #	P 052209
Starting Flow Rate	2.5
Sample Start Time	07:11
Ending Flow Rate	2.5
Sample End Time	14:31

Sampled Person's Name:	Leroy Paulson
BNSF Employee ID	2514925
Job Title	Operator
Machine Type	09000008
Pump Number	6
Sample #	PLP-052209
Starting Flow Rate	2.5
Sample Start Time	07:12
Ending Flow Rate	2.5
Sample End Time	10:48

Sampled Person's Name:	Blank Field (Opened)
BNSF Employee ID	
Job Title	
Machine Type	
Pump Number	
Sample #	B-BK 052209
Starting Flow Rate	
Sample Start Time	
Ending Flow Rate	
Sample End Time	

Sampled Person's Name:	
BNSF Employee ID	
Job Title	
Machine Type	
Pump Number	
Sample #	
Starting Flow Rate	
Sample Start Time	
Ending Flow Rate	
Sample End Time	

ATTACHMENT C

EMSL LABORATORY REPORTS AND CHAIN OF CUSTODY FORMS

EMSL Analytical, Inc.
107 West 4th Street, Libby, MT 59923
Phone: (406) 293-9066 Fax: Email: mobileasbestoslab@emsl.com

Attn: **Scott Carney**
EMR, Inc.
11 East Superior Street
Suite 260
Duluth, MN 55802

Fax: (218) 625-2337 Phone: (218) 625-2332
Project: **Samples collected 5/19/2009**

Customer ID: EMRI78
Customer PO:
Received: 05/20/09 8:45 AM
EMSL Order: 270900123

EMSL Proj: BNSF 2009 OSHA
Analysis Date: 5/27/2009

Sampling Date: 5/19/2009

Asbestos Fiber Analysis by Transmission Electron Microscopy (TEM) Performed by AHERA -EPA 40 CFR Part 763 Appendix A to Subpart E (Modified for Indirect Prep)

Sample	Location	Volume (Liters)	Area Analyzed (mm^2)	Non Asb	Asbestos Type(s)	# Structures ≥ 0.5μ < 5μ	# Structures ≥5μ	Analytical Sensitivity (S/cc)	Total Asbestos Concentration (S/mm^2)	Total Asbestos Concentration (S/cc)
01 *270900123-0001*		1584.00	0.1300		None Detected			0.0070	**<29.00**	**<0.0070**
02 *270900123-0002*		1590.00	0.1300		None Detected			0.0070	**<29.00**	**<0.0070**
03 *270900123-0003*		1584.00	0.1300		None Detected			0.0070	**<29.00**	**<0.0070**
04 *270900123-0004*		1382.00	0.1300		None Detected			0.2000	**<720.00**	**<0.2000**
05 *270900123-0005*		1373.00	0.1300		None Detected			0.0810	**<290.00**	**<0.0810**
06 *270900123-0006*		1300.00	0.1300		None Detected			0.0210	**<72.00**	**<0.0210**

Revised Report. Corrected concentrations for sample 06.

Analyst(s)

Roy Pescador (6)

R. K. Mahoney

R. K. Mahoney, Laboratory Manager
or other approved signatory

INTERNAL CHAIN OF CUSTODY

5/20/2009 11:05:52 AM

Order ID: 270900124

Attn: Scott Carney
EMR, Inc.
11 East Superior Street
Suite 260
Duluth, MN 55802

Fax: (218) 625-2337 Phone: (218) 625-2332

Project: **Samples collected 5/19/2009**

Customer ID EMRI78
Customer PO:
Received: 05/20/09 8:45 PM

EMSL Order: 270900124
EMSL Proj ID: BNSF 2009 OSHA
Cust COC ID

Test: TEM AHERA **Matrix** Air **TAT:** 24 Hour **Qty:** 4

Acct Sts: **Slsprsn:** epodell **Logged:** rmahoney **Date:** 5/20/2009

Inter- Lab Sample Transfer

Samples Relinquished: _____ Date _____
Samples Received: _____ Date _____
Package Mailed to Westmont: _____ Date _____
Method of Delivery: _____

Includes: (Circle)
Benchsheets Sample Slides Sample filters
Micrographs GridBox Other _____

Final Package Received: _____ Date: _____

Sample Condition: ☒ Acceptable ☐ Unacceptable

Comments

Initial Prep (Initials/Lab): EJWP **Date:** 5/20/09
Filter Prep (Initials/Lab): EJWP **Date:** 5/20/09
Grid Prep (Initials/Lab): EJWP **Date:** 5/20/09

For Special Projects Use Only
QC Selection: Date:
Date Package Review: Date:
Date Package Mailed: Date:

Special Instructions

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900124	270900124-0001	01A		5/21/2009 8:45:00 PM
270900124	270900124-0002	02A		5/21/2009 8:45:00 PM
270900124	270900124-0003	03A		5/21/2009 8:45:00 PM
270900124	270900124-0004	04A		5/21/2009 8:45:00 PM

2709-EMR-49, (A+B) / 2709-EMR-ARC-50, (A)

INTERNAL SAMPLE CHAIN OF CUSTODY

5/20/2009 11:05:59 AM

Order ID: 270900124

Attn: Scott Carney
EMR, Inc.
11 East Superior Street
Suite 260
Duluth, MN 55802

Fax: (218) 625-2337 Phone: (218) 625-2332

Project: **Samples collected 5/19/2009**

Customer ID: EMRI78
Customer PO:
Received: 05/20/09 8:45 PM

EMSL Order: 270900124
EMSL Proj ID: BNSF 2009 OSHA
Cust COC ID

Test: TEM AHERA **Matrix:** Air **TAT:** 24 Hour **Qty:** 4

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900124	270900124-0001	01A		5/21/2009 8:45:00 PM

Comments:

ANALYZED:	RKm	**Date:**	5/20/09
Preliminary Data Sent to Special Projects:	RKm	**Date:**	5/20/09
Data Entry:		Date:	
Structure Review:		Date:	
Data Validation:		Date:	
Reported to Client:		Date:	

Micrographs:

	Micrograph Number	Type Diffraction or Morphology

INTERNAL SAMPLE CHAIN OF CUSTODY

5/20/2009 11:06:00 AM

Order ID: 270900124

Attn: Scott Carney
EMR, Inc.
11 East Superior Street
Suite 260
Duluth, MN 55802

Fax: (218) 625-2337 Phone: (218) 625-2332

Project: **Samples collected 5/19/2009**

Customer ID: EMRI78
Customer PO:
Received: 05/20/09 8:45 PM

EMSL Order: 270900124
EMSL Proj ID: BNSF 2009 OSHA
Cust COC ID

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900124	270900124-0002	02A		5/21/2009 8:45:00 PM

Comments:

ANALYZED:	RKm	**Date:**	5/20/09
Preliminary Data Sent to Special Projects:	RKm	**Date:**	5/20/09
Data Entry:		Date:	
Structure Review:		Date:	
Data Validation:		Date:	
Reported to Client:		Date:	

Micrographs:

	Micrograph Number	Type Diffraction or Morphology

INTERNAL SAMPLE CHAIN OF CUSTODY

5/20/2009 11:06:00 AM

Order ID: 270900124

Attn: Scott Carney
EMR, Inc.
11 East Superior Street
Suite 260
Duluth, MN 55802

Fax: (218) 625-2337 Phone: (218) 625-2332

Project: **Samples collected 5/19/2009**

Customer ID: EMRI78
Customer PO:
Received: 05/20/09 8:45 PM

EMSL Order: 270900124
EMSL Proj ID: BNSF 2009 OSHA
Cust COC ID

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900124	270900124-0003	03A		5/21/2009 8:45:00 PM

Comments:

ANALYZED:	RKm	**Date:**	5/20/09
Preliminary Data Sent to Special Projects:	RKm	**Date:**	5/20/09
Data Entry:		Date:	
Structure Review:		Date:	
Data Validation:		Date:	
Reported to Client:		Date:	

Micrographs:

	Micrograph Number	Type Diffraction or Morphology

INTERNAL SAMPLE CHAIN OF CUSTODY

5/20/2009 11:06:00 AM

Order ID: 270900124

Attn: Scott Carney
EMR, Inc.
11 East Superior Street
Suite 260
Duluth, MN 55802

Fax: (218) 625-2337 Phone: (218) 625-2332

Project: **Samples collected 5/19/2009**

Customer ID: EMRI78
Customer PO:
Received: 05/20/09 8:45 PM

EMSL Order: 270900124
EMSL Proj ID: BNSF 2009 OSHA
Cust COC ID

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900124	270900124-0004	04A		5/21/2009 8:45:00 PM

Comments:

ANALYZED:	RKm	**Date:**	5/20/09
Preliminary Data Sent to Special Projects:	RKm	**Date:**	5/20/09
Data Entry:		Date:	
Structure Review:		Date:	
Data Validation:		Date:	
Reported to Client:		Date:	

Micrographs:

	Micrograph Number	Type Diffraction or Morphology

EMSL ANALYTICAL, INC.
LABORATORY • PRODUCTS • TRAINING

Asbestos Chain of Custody

EMSL Order Number *(Lab Use Only)*:

EMSL ANALYTICAL, INC.
107 HADDON AVENUE
WESTMONT, NJ 08108
PHONE: (856) 858-4800
FAX: (856) 858-4960

270900124

Company: EMR		**EMSL-Bill to:** ☐ Same ☐ Different If Bill to is Different note instructions in Comments**	
Street: 11 East Superior St Suite 260		*Third Party Billing requires written authorization from third party*	
City: Duluth	**State/Province:** MN	**Zip/Postal Code:** 55802	**Country:** USA
Report To (Name): Scot Carney		**Fax #:**	
Telephone #: (218) 625-2331		**Email Address:**	
Project Name/Number:			
Please Provide Results: ☐ Fax ☐ Email	**Purchase Order:**	**U.S. State Samples Taken:**	

Turnaround Time (TAT) Options* – Please Check

☐ 3 Hours ☐ 6 Hours ■ 24 Hrs ☐ 48 Hrs ☐ 3 Days ☐ 4 Days ☐ 5 Days ☐ 10 Days

**For TEM Air 3 hours/6 hours, please call ahead to schedule.*There is a premium charge for 3 Hour TEM AHERA or EPA Level II TAT. You will be asked to sign an authorization form for this service. Analysis completed in accordance with EMSL's Terms and Conditions located in the Analytical Price Guide.*

PCM - Air
- ☐ NIOSH 7400
- ☐ w/ OSHA 8hr. TWA

PLM - Bulk (reporting limit)
- ☐ PLM EPA 600/R-93/116 (<1%)
- ☐ PLM EPA NOB (<1%)

Point Count
- ☐ 400 (<0.25%) ☐ 1000 (<0.1%)

Point Count w/Gravimetric
- ☐ 400 (<0.25%) ☐ 1000 (<0.1%)
- ☐ NYS 198.1 (friable in NY)
- ☐ NYS 198.6 NOB (non-friable-NY)
- ☐ NIOSH 9002 (<1%)

TEM - Air
- ■ AHERA 40 CFR, Part 763
- ☐ NIOSH 7402
- ☐ EPA Level II
- ☐ ISO 10312

TEM - Bulk
- ☐ TEM EPA NOB
- ☐ NYS NOB 198.4 (non-friable-NY)
- ☐ Chatfield SOP
- ☐ TEM Mass Analysis-EPA 600 sec. 2.5

TEM – Water: EPA 100.2
- Fibers >10µm ☐ Waste ☐ Drinking
- All Fiber Sizes ☐ Waste ☐ Drinking

TEM- Dust
- ☐ Microvac - ASTM D 5755
- ☐ Wipe - ASTM D6480
- ☐ Carpet Sonication (EPA 600/J-93/167)

Soil/Rock/Vermiculite
- ☐ PLM CARB 435 - A (0.25% sensitivity)
- ☐ PLM CARB 435 - B (0.1% sensitivity)
- ☐ TEM CARB 435 - B (0.1% sensitivity)
- ☐ TEM CARB 435 - C (0.01% sensitivity)
- ☐ EPA Protocol (Semi-Quantitative)
- ☐ EPA Protocol (Quantitative)

Other:
- ☐

☐ **Check For Positive Stop – Clearly Identify Homogenous Group**

Samplers Name: **Samplers Signature:**

Sample #	Sample Description	Volume/Area (Air) HA # (Bulk)	Date/Time Sampled
01A	Area Background MP. 1307	4216	5/19/09 07:44 - 16:00
02A	Area Mobil Pump Sample MP 1307-1313	3360	5/19/09 08:13 - 15:13
03A	Field Blank		
04A	Lab Blank		

Client Sample # (s): 01A - 04A **Total # of Samples:** 4

Relinquished (Client): Michael McKay **Date:** 5/20/09 **Time:** 08:45

Received (Lab): R.K Mahony **Date:** 5/20/09 **Time:** 0845

Comments/Special Instructions:

Personal Air Sample Data
BNSF Kootenai River Subdivision
OSHA Sampling

Date: 5/19/09 Work Area Mileposts: 1307 - 1313 27090010-4

Sampled Person's Name:	Area Background Sample MP 1307
BNSF Employee ID	
Job Title	
Machine Type	
Pump Number	11
Sample #	01A
Starting Flow Rate	9.0
Sample Start Time	07:44
Ending Flow Rate	8.0
Sample End Time	16:00

Sampled Person's Name:	Area Mobile Pump Sample MP 1307 - 1313
BNSF Employee ID	
Job Title	
Machine Type	
Pump Number	10
Sample #	02A
Starting Flow Rate	8
Sample Start Time	08:13
Ending Flow Rate	8
Sample End Time	15:13

Sampled Person's Name:	
BNSF Employee ID	
Job Title	
Machine Type	
Pump Number	
Sample #	
Starting Flow Rate	
Sample Start Time	
Ending Flow Rate	
Sample End Time	

Sampled Person's Name:	
BNSF Employee ID	
Job Title	
Machine Type	
Pump Number	
Sample #	
Starting Flow Rate	
Sample Start Time	
Ending Flow Rate	
Sample End Time	

EMSL Analytical, Inc.
107 West 4th Street, Libby, MT 59923
Phone: (406) 293-9066 Fax: Email: mobileasbestoslab@emsl.com

Attn: **Scott Carney**
EMR, Inc.
11 East Superior Street
Suite 260
Duluth, MN 55802

Fax: (218) 625-2337 Phone: (218) 625-2332
Project: **Samples collected 5/19/2009**

Customer ID: EMRI78
Customer PO:
Received: 05/20/09 8:45 PM
EMSL Order: 270900124

EMSL Proj: BNSF 2009 OSHA
Analysis Date: 5/20/2009

Sampling Date: 5/19/2009

Asbestos Fiber Analysis by Transmission Electron Microscopy (TEM) Performed by EPA 40 CFR Part 763 Appendix A to Subpart E

Sample	Location	Volume (Liters)	Area Analyzed (mm^2)	Non Asb	Asbestos Type(s)	# Structures ≥ 0.5μ < 5μ	# Structures ≥5μ	Analytical Sensitivity (S/cc)	Asbestos Concentration (S/mm^2)	Asbestos Concentration (S/cc)
01A *270900124-0001*		4216.00	0.0520		None Detected			0.0018	**<19.00**	**<0.0018**
02A *270900124-0002*		3360.00	0.0520		None Detected			0.0022	**<19.00**	**<0.0022**
03A *270900124-0003* Field Blank			0.1300		None Detected				**<7.70**	
04A *270900124-0004* Lab Blank			0.1300		None Detected				**<7.70**	

Analyst(s)

Ron Mahoney (4)

R. K. Mahoney, Laboratory Manager
or other approved signatory

Disclaimers: The laboratory is not responsible for data reported in structures/cc, which is dependent on volume collected by non-laboratory personnel. This lab is only responsible for data reported in structures/mm^2. This report may not be reproduced, except in full, without written approval by EMSL. This report must not be used to claim product endorsement by NVLAP or any agency of the U.S. Government. This report relates only to the samples reported above. Quality control data (including 95% confidence limits and laboratory and analysts' accuracy and precision) is available upon request. As per 40 CFR 763, the initial screening test may not be applied to samples with collected volumes of <1200 liters. The test results contained within this report meet the requirements of NELAC unless otherwise noted. Samples received in good condition unless otherwise noted.

Accredited for NVLAP PLM/TEM. NVLAP Libby code: 200745-0

BNSF 2009 OSHA
TEM Asbestos Structure Count

Laboratory name:	EMSL27
Instrument	JEOL 1200 EX II (27-3)
Voltage (KV)	100
Magnification	20,000 X
Grid opening area (mm2)	0.013
Scale: 1L =	1
Scale: 1D =	1
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	360
Category (Field, Rep., Dup., Blank)	Field
Primary filter pore size (um)	0.8

EPA Sample Number:	01A
Sample Type (A=Air, D=Dust, DF = Dustfall):	A
Air volume (L), dust area (cm2), or dustfall container area (cm2)	4216
Date received by lab	5/20/2009
Lab Job Number:	270900124
Lab Sample Number:	270900124-0001
Number of grids prepared	3
Prepared by	E.J. Wyatt-Pescador
Preparation date	5/20/2009
EPA COC Number:	5/20/2009
Secondary filter pore size (um)	0.2

Analyzed by	R. Mahoney
Analysis date	5/20/2009
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
If sample type = air, is there loose material or debris in the cowl? (Yes, No)	No
Counting rules (ISO, AHERA, ASTM)	AHERA
Grid storage location	2709-EMR-49, A
Archive filter(s) storage location	Westmont
QA Type (Not QA, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interlab)	Not QA

F-Factor Calculation (Indirect Preps Only):

Enter data in appropriate cells provided to the right----->

Recording Rules:

Minimum Aspect Ratio (circle one):

none ≥ 3:1 (≥ 5:1)

Minimum Length (um):	0.5
Minimum Width (um):	None

Stopping Rules:

Target Sensitivity:	0.0050
Max # of GOs:	4
Target # of Structures:	

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		Identification	Mineral Class (see below)				Sketch/ Comments	1 = yes, blank = no			Fract. GO Chrys.
			Primary	Total	Length	Width		LA	OA	C	NAM		Sketch	Photo	EDS	
1	C5															
	C7															
2	D5															
	D7															
							RIem									

F-factor Calculation:

Indirect Prep Inputs

	Fraction of primary filter used for indirect prep or ashing *[For dust and dustfall, enter 1.0]*
	First resuspension volume or rinsate volume (mL)
	Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

	Second resuspension volume (mL)
	Volume applied to secondary filter (mL) or used for serial dilution
	Third resuspension volume (mL)
	Volume applied to secondary filter (mL)

Input for Ashing of Secondary Filter

	Fraction of secondary filter used for ashing

LA = Libby-type amphibole

OA = Other (non-Libby type) amphibole

C = Chrysotile

NAM = Non-asbestos material

Grid opening traverse direction (circle one):

H Horizontal

(V) Vertical

Are prepped grids acceptable for analysis? (circle one) (Yes) No

If No, explain:

BNSF 2009 OSHA
TEM Asbestos Structure Count

Laboratory name:	EMSL27
Instrument	JEOL 1200 EX II (27-3)
Voltage (KV)	100
Magnification	20,000 X
Grid opening area (mm2)	0.013
Scale: 1L =	1
Scale: 1D =	1
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	360
Category (Field, Rep., Dup., Blank)	Field
Primary filter pore size (um)	0.8

EPA Sample Number:	02A
Sample Type (A=Air, D=Dust, DF = Dustfall):	A
Air volume (L), dust area (cm2), or dustfall container area (cm2)	3360
Date received by lab	5/20/2009
Lab Job Number:	270900124
Lab Sample Number:	270900124-0002
Number of grids prepared	3
Prepared by	E.J. Wyatt-Pescador
Preparation date	5/20/2009
EPA COC Number:	5/20/2009
Secondary filter pore size (um)	0.2

Analyzed by	R. Mahoney
Analysis date	5/20/2009
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
If sample type = air, is there loose material or debris in the cowl? (Yes, No)	No
Counting rules (ISO, AHERA, ASTM)	AHERA
Grid storage location	2709-EMR-49, A
Archive filter(s) storage location	Westmont
QA Type (Not QA, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interlab)	Not QA

F-Factor Calculation (Indirect Preps Only):

Enter data in appropriate cells provided to the right----->

Recording Rules:

Minimum Aspect Ratio (circle one):

none ≥ 3:1 (≥ 5:1)

Minimum Length (um): 0.5

Minimum Width (um): None

Stopping Rules:

Target Sensitivity: 0.0050

Max # of GOs: 4

Target # of Structures:

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		Identification	Mineral Class (see below)				Sketch/ Comments	1 = yes, blank = no			Fract. GO Chrys.
			Primary	Total	Length	Width		LA	OA	C	NAM		Sketch	Photo	EDS	
1	G5	ND														
	G7	ND														
2	H6	ND														
	H8	ND														
							RLM 5/20/09									

F-factor Calculation:

Indirect Prep Inputs

- Fraction of primary filter used for indirect prep or ashing *[For dust and dustfall, enter 1.0]*
- First resuspension volume or rinsate volume (mL)
- Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

- Second resuspension volume (mL)
- Volume applied to secondary filter (mL) or used for serial dilution
- Third resuspension volume (mL)
- Volume applied to secondary filter (mL)

Input for Ashing of Secondary Filter

- Fraction of secondary filter used for ashing

LA = Libby-type amphibole OA = Other (non-Libby type) amphibole C = Chrysotile NAM = Non-asbestos material

Grid opening traverse direction (circle one):

H Horizontal

(V) Vertical

Are prepped grids acceptable for analysis? (circle one) (Yes) No

If No, explain:

BNSF 2009 OSHA
TEM Asbestos Structure Count

Laboratory name:	EMSL27
Instrument	JEOL 1200 EX II (27-3)
Voltage (KV)	100
Magnification	20,000 X
Grid opening area (mm2)	0.013
Scale: 1L =	1
Scale: 1D =	1
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	360
Category (Field, Rep., Dup., Blank)	Blank
Primary filter pore size (um)	0.8

EPA Sample Number:	03A
Sample Type (A=Air, D=Dust, DF = Dustfall):	A
Air volume (L), dust area (cm2), or dustfall container area (cm2)	0
Date received by lab	5/20/2009
Lab Job Number:	270900124
Lab Sample Number:	270900124-0003
Number of grids prepared	3
Prepared by	E.J. Wyatt-Pescador
Preparation date	5/20/2009
EPA COC Number:	5/20/2009
Secondary filter pore size (um)	0.2

Analyzed by	R. Mahoney
Analysis date	5/20/2009
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
If sample type = air, is there loose material or debris in the cowl? (Yes, No)	No
Counting rules (ISO, AHERA, ASTM)	AHERA
Grid storage location	2709-EMR-49, A
Archive filter(s) storage location	Westmont
QA Type (Not QA, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interlab)	Not QA

F-Factor Calculation (Indirect Preps Only):

Enter data in appropriate cells provided to the right---->

Recording Rules:

Minimum Aspect Ratio (circle one):

none ≥ 3:1 (≥ 5:1)

Minimum Length (um):	0.5
Minimum Width (um):	None

Stopping Rules:

Target Sensitivity:	
Max # of GOs:	10
Target # of Structures:	

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		Identification	Mineral Class (see below)				Sketch/ Comments	1 = yes, blank = no			Fract. GO Chrys.
			Primary	Total	Length	Width		LA	OA	C	NAM		Sketch	Photo	EDS	
1	I 2	ND														
	I 4	ND														
	I 6	ND														
	I 8	ND														
	I 10	ND														
2	F 10	ND														
	F 8	ND														
	F 6	ND														
	I 7	ND														
	I 5	ND														

F-factor Calculation:

Indirect Prep Inputs

	Fraction of primary filter used for indirect prep or ashing *[For dust and dustfall, enter 1.0]*
	First resuspension volume or rinsate volume (mL)
	Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

	Second resuspension volume (mL)
	Volume applied to secondary filter (mL) or used for serial dilution
	Third resuspension volume (mL)
	Volume applied to secondary filter (mL)

Input for Ashing of Secondary Filter

	Fraction of secondary filter used for ashing

LA = Libby-type amphibole OA = Other (non-Libby type) amphibole C = Chrysotile NAM = Non-asbestos material

Grid opening traverse direction (circle one):

H Horizontal

(V) Vertical

Are prepped grids acceptable for analysis? (circle one) (Yes) No

If No, explain:

BNSF 2009 OSHA
TEM Asbestos Structure Count

Laboratory name:	EMSL27
Instrument	JEOL 1200 EX II (27-3)
Voltage (KV)	100
Magnification	20,000 X
Grid opening area (mm2)	0.013
Scale: 1L =	1
Scale: 1D =	1
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	360
Category (Field, Rep., Dup., Blank)	Blank
Primary filter pore size (um)	0.8

EPA Sample Number:	04A
Sample Type (A=Air, D=Dust, DF = Dustfall):	A
Air volume (L), dust area (cm2), or dustfall container area (cm2)	0
Date received by lab	5/20/2009
Lab Job Number:	270900124
Lab Sample Number:	270900124-000
Number of grids prepared	3
Prepared by	E.J. Wyatt-Pescador
Preparation date	5/20/2009
EPA COC Number:	5/20/2009
Secondary filter pore size (um)	0.2

Analyzed by	R. Mahoney
Analysis date	5/20/2009
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
If sample type = air, is there loose material or debris in the cowl? (Yes, No)	No
Counting rules (ISO, AHERA, ASTM)	AHERA
Grid storage location	2709-EMR-49, B
Archive filter(s) storage location	Westmont
QA Type (Not QA, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interlab)	Not QA

F-Factor Calculation (Indirect Preps Only):

Enter data in appropriate cells provided to the right----->

Recording Rules:

Minimum Aspect Ratio (circle one):

none ≥ 3:1 (≥ 5:1)

Minimum Length (um): 0.5

Minimum Width (um): None

Stopping Rules:

Target Sensitivity:

Max # of GOs: 10

Target # of Structures:

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		Identification	Mineral Class (see below)				Sketch/ Comments	1 = yes, blank = no			Fract. GO Chrys.
			Primary	Total	Length	Width		LA	OA	C	NAM		Sketch	Photo	EDS	
1	B10	ND														
	B8	ND														
	B6	ND														
	B4	ND														
	B2	ND														
2	H9	ND														
	H7	ND														
	H5	ND														
	H3	ND														
	H1	ND														

F-factor Calculation:

Indirect Prep Inputs

- Fraction of primary filter used for indirect prep or ashing *[For dust and dustfall, enter 1.0]*
- First resuspension volume or rinsate volume (mL)
- Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

- Second resuspension volume (mL)
- Volume applied to secondary filter (mL) or used for serial dilution
- Third resuspension volume (mL)
- Volume applied to secondary filter (mL)

Input for Ashing of Secondary Filter

- Fraction of secondary filter used for ashing

LA = Libby-type amphibole OA = Other (non-Libby type) amphibole C = Chrysotile NAM = Non-asbestos material

Grid opening traverse direction (circle one):

H Horizontal

(V) Vertical

Are prepped grids acceptable for analysis? (circle one) (Yes) No

If No, explain:

LB

BNSF 2009 OSHA
TEM Asbestos Structure Count

Laboratory name:	EMSL27
Instrument	JEOL 1200 EX II (27-3)
Voltage (KV)	100
Magnification	20,000 X
Grid opening area (mm2)	
Scale: 1L =	1
Scale: 1D =	1
Primary filter area (mm2)	
Secondary Filter Area (mm2)	
Category (Field, Rep., Dup., Blank)	Blank
Primary filter pore size (um)	0.8

EPA Sample Number:	
Sample Type (A=Air, D=Dust, DF = Dustfall):	A
Air volume (L), dust area (cm2), or dustfall container area (cm2)	0
Date received by lab	
Lab Job Number:	270900124
Lab Sample Number:	270900124-000
Number of grids prepared	2
Prepared by	E.J. Wyatt-Pescador
Preparation date	5/20/2009
EPA COC Number:	5/20/2009
Secondary filter pore size (um)	0.2

Analyzed by	R. Mahoney
Analysis date	5/20/2009
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
If sample type = air, is there loose material or debris in the cowl? (Yes, No)	No
Counting rules (ISO, AHERA, ASTM)	AHERA
Grid storage location	2709-EMR-49, B
Archive filter(s) storage location	Westmont
QA Type (Not QA, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interlab)	Lab Blank

F-Factor Calculation (Indirect Preps Only):

Enter data in appropriate cells provided to the right---->

Recording Rules:

Minimum Aspect Ratio (circle one):

none ≥ 3:1 (≥ 5:1)

Minimum Length (um):	0.5
Minimum Width (um):	None

Stopping Rules:

Target Sensitivity:	
Max # of GOs:	10
Target # of Structures:	

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		Identification	Mineral Class (see below)				Sketch/ Comments	1 = yes, blank = no			Fract. GO Chrys.
			Primary	Total	Length	Width		LA	OA	C	NAM		Sketch	Photo	EDS	
1	I1	ND														
	I3	ND														
	I5	ND														
	I7	ND														
	I9	ND														
2	H10	ND														
	H8	ND														
	H6	ND														
	H4	ND														
	H2	ND														

F-factor Calculation:

Indirect Prep Inputs

	Fraction of primary filter used for indirect prep or ashing *[For dust and dustfall, enter 1.0]*
	First resuspension volume or rinsate volume (mL)
	Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

	Second resuspension volume (mL)
	Volume applied to secondary filter (mL) or used for serial dilution
	Third resuspension volume (mL)
	Volume applied to secondary filter (mL)

Input for Ashing of Secondary Filter

	Fraction of secondary filter used for ashing

LA = Libby-type amphibole OA = Other (non-Libby type) amphibole C = Chrysotile NAM = Non-asbestos material

Grid opening traverse direction (circle one):

H Horizontal

(V) Vertical

Are prepped grids acceptable for analysis? (circle one) (Yes) No

If No, explain:

INTERNAL CHAIN OF CUSTODY

5/29/2009 11:41:21 AM

Order ID: 270900129

Attn: Scott Carney
EMR, Inc.
11 East Superior Street
Suite 260
Duluth, MN 55802

Fax: (218) 625-2337 Phone: (218) 625-2332

Project: **5539 052009-01**
Samples collected 5/20/2009

Customer ID: EMRI78
Customer PO:
Received: 05/21/09 10:30 AM

EMSL Order: 270900129
EMSL Proj ID: BNSF 2009 OSHA
Cust COC ID

Test: TEM AHERA **Matrix** Air **TAT:** 24 Hour **Qty:** 5

Acct Sts: **Slsprsn:** epodell

Logged: rmahoney **Date:** 5/21/2009

Sample Condition: ☒ Acceptable ☐ Unacceptable

Comments

Inter- Lab Sample Transfer

Samples Relinquished: _____ Date _____
Samples Received: _____ Date _____
Package Mailed to Westmont: _____ Date _____
Method of Delivery: _____

Includes: (Circle)
Benchsheets Sample Slides Sample filters
Micrographs GridBox Other _____

Initial Prep (Initials/Lab): [illegible] **Date:** 5/26/09
Filter Prep (Initials/Lab): [illegible] **Date:** 5/28/09
Grid Prep (Initials/Lab): [illegible] **Date:** 5/29/09

Final Package Received: _____ Date: _____

For Supervisor Use Only
QC Selection: _____ Date: _____
Date Package Review: _____ Date: _____
Date Package Mailed: _____ Date: _____

Special Instructions

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900129	270900129-0001	P-DC 052009		5/22/2009 10:30:00 AM
270900129	270900129-0005	P-JT 052009		5/22/2009 10:30:00 AM
270900129	270900129-0007	A-RB 052009 (RD) -EMP		5/22/2009 10:30:00 AM
270900129	270900129-0008	A-BB 052009		5/22/2009 10:30:00 AM
270900129	270900129-0009	B-BK 052009		5/22/2009 10:30:00 AM

RD 2709-EMR-49 (H-L) 2709-EMR-ARC-50 (D-E)

INTERNAL CHAIN OF CUSTODY

5/29/2009 11:41:21 AM

Order ID: 270900129

Attn: Scott Carney
EMR, Inc.
11 East Superior Street
Suite 260
Duluth, MN 55802

Fax: (218) 625-2337 Phone: (218) 625-2332

Project: **5539 052009-01**
Samples collected 5/20/2009

Customer ID EMRI78
Customer PO:
Received: 05/21/09 10:30 AM

EMSL Order: 270900129
EMSL Proj ID: BNSF 2009 OSHA
Cust COC ID

Test: TEM AHERA (Indirect) **Matrix** Air **TAT:** 24 Hour **Qty:** 4

Acct Sts: **Slsprsn:** epodell **Logged:** rmahoney **Date:** 5/21/2009

Inter- Lab Sample Transfer

Samples Relinquished: Date
Samples Received: Date
Package Mailed to Westmont: Date
Method of Delivery:

Includes: (Circle)
Benchsheets Sample Slides Sample filters
Micrographs GridBox Other

Final Package Received: Date:

Sample Condition: ☒ Acceptable ☐ Unacceptable

Comments

Initial Prep (Initials/Lab): RMY **Date:** 5/26/09
Filter Prep (Initials/Lab): RMY **Date:** 5/28/09
Grid Prep (Initials/Lab): RMY **Date:** 5/29/09

For Special Projects Use Only
QC Selection: Date:
Date Package Review: Date:
Date Package Mailed: Date:

Special Instructions

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900129	270900129-0002	P-KF 052009	10, 15, (25) 50 (first dil) - Ashed	5/20/2009
270900129	270900129-0003	P-LP 052009	10, 15, 25, (50) (1st dil) - Ashed	5/20/2009
270900129	270900129-0004	P-DW 052009	10, (15) 25, 50 (2nd dil) - Ashed	5/20/2009
270900129	270900129-0006	P-RH 052009	10, 15, 25, (50) (1st dil)	5/20/2009

RMY 5/29/09

2709-EMR-49(H-L) 2709-~~WE~~ EMR-ARC-50 (D-E)

INTERNAL SAMPLE CHAIN OF CUSTODY

5/29/2009 11:43:16 AM

Order ID: 270900129

Attn: Scott Carney
EMR, Inc.
11 East Superior Street
Suite 260
Duluth, MN 55802

Fax: (218) 625-2337 Phone: (218) 625-2332

Project: **5539 052009-01**
Samples collected 5/20/2009

Customer ID: EMRI78
Customer PO:
Received: 05/21/09 10:30 AM

EMSL Order: 270900129
EMSL Proj ID: BNSF 2009 OSHA
Cust COC ID

Test: TEM AHERA **Matrix:** Air **TAT:** 24 Hour **Qty:** 5

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900129	270900129-0001	P-DC 052009		5/22/2009 10:30:00 AM

Comments:

ANALYZED:	RMV	**Date:**	5/29/09
Preliminary Data Sent to Special Projects:	RKm	**Date:**	6/1/09
Data Entry:		Date:	
Structure Review:		Date:	
Data Validation:		Date:	
Reported to Client:		Date:	

Micrographs:

	Micrograph Number	Type Diffraction or Morphology

INTERNAL SAMPLE CHAIN OF CUSTODY

5/29/2009 11:43:17 AM

Order ID: 270900129

Attn: Scott Carney
EMR, Inc.
11 East Superior Street
Suite 260
Duluth, MN 55802

Fax: (218) 625-2337 Phone: (218) 625-2332

Project: **5539 052009-01**
Samples collected 5/20/2009

Customer ID: EMRI78
Customer PO:
Received: 05/21/09 10:30 AM

EMSL Order: 270900129
EMSL Proj ID: BNSF 2009 OSHA
Cust COC ID

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900129	270900129-0005	P-JT 052009		5/22/2009 10:30:00 AM

Comments:

ANALYZED:	RTJ	**Date:**	5/29/09
Preliminary Data Sent to Special Projects:	RLcm	**Date:**	6/1/09
Data Entry:		Date:	
Structure Review:		Date:	
Data Validation:		Date:	
Reported to Client:		Date:	

Micrographs:

	Micrograph Number	Type Diffraction or Morphology

INTERNAL SAMPLE CHAIN OF CUSTODY

5/29/2009 11:43:17 AM

Order ID: 270900129

Attn: Scott Carney
EMR, Inc.
11 East Superior Street
Suite 260
Duluth, MN 55802

Fax: (218) 625-2337 Phone: (218) 625-2332

Project: **5539 052009-01**
Samples collected 5/20/2009

Customer ID: EMRI78
Customer PO:
Received: 05/21/09 10:30 AM

EMSL Order: 270900129
EMSL Proj ID: BNSF 2009 OSHA
Cust COC ID

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900129	270900129-0007	A-RB 052009		5/22/2009 10:30:00 AM

Comments:

ANALYZED:	JMY	**Date:**	5/29/09
Preliminary Data Sent to Special Projects:	RKM	**Date:**	6/1/09
Data Entry:		Date:	
Structure Review:		Date:	
Data Validation:		Date:	
Reported to Client:		Date:	

Micrographs:

	Micrograph Number	Type Diffraction or Morphology

INTERNAL SAMPLE CHAIN OF CUSTODY

5/29/2009 11:43:17 AM

Order ID: 270900129

Attn: Scott Carney
EMR, Inc.
11 East Superior Street
Suite 260
Duluth, MN 55802

Fax: (218) 625-2337 Phone: (218) 625-2332

Project: **5539 052009-01**
Samples collected 5/20/2009

Customer ID: EMRI78
Customer PO:
Received: 05/21/09 10:30 AM

EMSL Order: 270900129
EMSL Proj ID: BNSF 2009 OSHA
Cust COC ID

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900129	270900129-0008	A-BB 052009		5/22/2009 10:30:00 AM

Comments:

ANALYZED:	RM	**Date:**	5/29/09
Preliminary Data Sent to Special Projects:	R/cm	**Date:**	6/1/09
Data Entry:		Date:	
Structure Review:		Date:	
Data Validation:		Date:	
Reported to Client:		Date:	

Micrographs:

	Micrograph Number	Type Diffraction or Morphology

INTERNAL SAMPLE CHAIN OF CUSTODY

5/29/2009 11:43:17 AM

Order ID: 270900129

Attn: Scott Carney
EMR, Inc.
11 East Superior Street
Suite 260
Duluth, MN 55802

Fax: (218) 625-2337 Phone: (218) 625-2332

Project: **5539 052009-01**
Samples collected 5/20/2009

Customer ID: EMRI78
Customer PO:
Received: 05/21/09 10:30 AM

EMSL Order: 270900129
EMSL Proj ID: BNSF 2009 OSHA
Cust COC ID

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900129	270900129-0009	B-BK 052009		5/22/2009 10:30:00 AM

Comments:

ANALYZED:	RTJ	**Date:**	6/2/09
Preliminary Data Sent to Special Projects:	RKm	**Date:**	6/1/09
Data Entry:		Date:	
Structure Review:		Date:	
Data Validation:		Date:	
Reported to Client:		Date:	

Micrographs:

	Micrograph Number	Type Diffraction or Morphology

Test: TEM AHERA (Indirect) **Matrix:** Air **TAT:** 24 Hour **Qty:** 4

INTERNAL SAMPLE CHAIN OF CUSTODY

5/29/2009 11:43:17 AM

Order ID: 270900129

Attn: Scott Carney
EMR, Inc.
11 East Superior Street
Suite 260
Duluth, MN 55802

Fax: (218) 625-2337 Phone: (218) 625-2332

Project: **5539 052009-01**
Samples collected 5/20/2009

Customer ID: EMRI78
Customer PO:
Received: 05/21/09 10:30 AM

EMSL Order: 270900129
EMSL Proj ID: BNSF 2009 OSHA
Cust COC ID

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900129	270900129-0002	P-KF 052009		5/20/2009

Comments:

ANALYZED:	RM	**Date:**	5/29/09
Preliminary Data Sent to Special Projects:	RKm	**Date:**	6/1/09
Data Entry:		Date:	
Structure Review:		Date:	
Data Validation:		Date:	
Reported to Client:		Date:	

Micrographs:

	Micrograph Number	Type Diffraction or Morphology

INTERNAL SAMPLE CHAIN OF CUSTODY

5/29/2009 11:43:17 AM

Order ID: 270900129

Attn: Scott Carney
EMR, Inc.
11 East Superior Street
Suite 260
Duluth, MN 55802
Fax: (218) 625-2337 Phone: (218) 625-2332

Project: **5539 052009-01**
Samples collected 5/20/2009

Customer ID: EMRI78
Customer PO:
Received: 05/21/09 10:30 AM

EMSL Order: 270900129
EMSL Proj ID: BNSF 2009 OSHA
Cust COC ID

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900129	270900129-0003	P-LP 052009		5/20/2009

Comments:

ANALYZED:	[signature]	**Date:**	5/29/09
Preliminary Data Sent to Special Projects:	RKm	**Date:**	6/1/09
Data Entry:		Date:	
Structure Review:		Date:	
Data Validation:		Date:	
Reported to Client:		Date:	

Micrographs:

	Micrograph Number	Type Diffraction or Morphology

INTERNAL SAMPLE CHAIN OF CUSTODY

5/29/2009 11:43:17 AM

Order ID: 270900129

Attn: Scott Carney
EMR, Inc.
11 East Superior Street
Suite 260
Duluth, MN 55802

Fax: (218) 625-2337 Phone: (218) 625-2332

Project: **5539 052009-01**
Samples collected 5/20/2009

Customer ID: EMRI78
Customer PO:
Received: 05/21/09 10:30 AM

EMSL Order: 270900129
EMSL Proj ID: BNSF 2009 OSHA
Cust COC ID

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900129	270900129-0004	P-DW 052009		5/20/2009

Comments:

ANALYZED:	RM	**Date:**	6/29/09
Preliminary Data Sent to Special Projects:	RKm	**Date:**	6/1/09
Data Entry:		Date:	
Structure Review:		Date:	
Data Validation:		Date:	
Reported to Client:		Date:	

Micrographs:

	Micrograph Number	Type Diffraction or Morphology

INTERNAL SAMPLE CHAIN OF CUSTODY

5/29/2009 11:43:17 AM

Order ID: 270900129

Attn: Scott Carney
EMR, Inc.
11 East Superior Street
Suite 260
Duluth, MN 55802
Fax: (218) 625-2337 Phone: (218) 625-2332

Project: **5539 052009-01**
Samples collected 5/20/2009

Customer ID: EMRI78
Customer PO:
Received: 05/21/09 10:30 AM

EMSL Order: 270900129
EMSL Proj ID: BNSF 2009 OSHA
Cust COC ID

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900129	270900129-0006	P-RH 052009		5/20/2009

Comments:

ANALYZED:	RM	**Date:**	5/29/09
Preliminary Data Sent to Special Projects:	Rkm	**Date:**	6/1/09
Data Entry:		Date:	
Structure Review:		Date:	
Data Validation:		Date:	
Reported to Client:		Date:	

Micrographs:

	Micrograph Number	Type Diffraction or Morphology

Indirect Preparation Record

INDIRECT PREPARATION RECORD
REVISION 1
FEBRUARY 9, 2009

(TEM Air, circled) TEM Dust PCM (Circle One)

EFA 360 (mm2)

Prepped by: RB	Date: 5/28/09	Indirect without ashing			Dilution Filtration						Indirect with Ashing			
Order ID	Sample #	Fraction of filter used	1st Resuspend Volume mL	Volume applied to filter mL	Volume of 1st Resuspend used mL	2nd Re-suspend Volume mL	Volume applied to filter mL	Volume of 2nd Re-suspend used mL	3rd Re-suspend Volume mL	Volume applied to filter mL	Fraction of filter ashed	Volume used to resuspend residue mL	Volume applied to 2nd filter mL	OK to Prep to Grid? Y/N
270900129	PKF052009										1	100	10	
													15	
													25	Y
													50	
	PLP052009										1	100	10	
													15	
													25	
													50	Y
	PDW052009										1	100	10	
													80	
								10	100	10				
										15				Y
										25				
										50				
	PRH052009	1	100	10	~~1~~ pmp 6/1/09	~~100~~ pmp 6/1/09	~~10~~ pmp 6/1/09							
				15			~~15~~							
				25			~~25~~							
				50			~~50~~							Y
	FB										—	100	100	
	AB										—	100	100	

001478

Indirect Preparation Record

TEM Air (Circle One) TEM Dust PCM EFA 360 (mm2)

		Indirect without ashing			Dilution Filtration						Indirect with Ashing			
Prepped by: RBP	Date: 5/28/09	Fraction of filter used	1st Resuspend Volume	Volume applied to filter	Volume of 1st Resuspend used	2nd Re-suspend Volume	Volume applied to filter	Volume of 2nd Re-suspend used	3rd Re-suspend Volume	Volume applied to filter	Fraction of filter ashed	Volume used to resuspend residue	Volume applied to 2nd filter	OK to Prep to Grid?
Order ID	Sample #		mL	mL	mL	mL	mL	mL	mL	mL		mL	mL	Y/N
2709001129	MB				-	100	100							

pm 5/28/09

001479

EMSL ANALYTICAL, INC.
107 4TH STREET WEST
LIBBY, MONTANA 59923
TEL: 406-293-9066
FAX: 406-293-7016

RE: Sample preparation for 270900129 (BNSF-EMR)

The following samples (P-KF052009, P-LP052009 & P-DW052009) were processed in the described method (M2):

M2 (loose material)

1. Loose materials in cassette consolidated with overloaded filter were prepared for ashing.
2. Samples placed in LFE asher until filters have been completely ashed.
3. Ashed sample (AS) re-suspended in 100mL particle water.
4. Fractions filtered (10, 15, 25 & 50mL) on 0.2µm filter backed by 5.0µm. Sample P-DW052009 was processed through second dilution.
5. Selected volume processed to grids.

The following samples, P-DC052009, P-JT052009, A-RB052009, A-BB052009 & B-BK052009, were processed directly.

Sample P-RH052009 was processed indirectly without ashing:

M3 (full filter used)

1. Sample re-suspended in 100mL particle water.
2. Fractions filtered (10, 15, 25 & 50mL) on 0.2µm filter backed by 5.0µm
3. Selected volume processed to grids.

Please refer to SOP No.: EPA-LIBBY-08 for further information.

5/29/09

EMSL ANALYTICAL, INC.
LABORATORY • PRODUCTS • TRAINING

Asbestos Chain of Custody

EMSL Order Number *(Lab Use Only)*: 5539 052009-01

EMSL ANALYTICAL, INC.
107 HADDON AVENUE
WESTMONT, NJ 08108
PHONE: (856) 858-4800
FAX: (856) 858-4960

270900129

Company: EMR	**EMSL-Bill to:** ☐ Same ☐ Different If Bill to is Different note instructions in Comments** *Third Party Billing requires written authorization from third party*
Street: 11 East Superior St Suite 260	
City: Duluth **State/Province:** MN	**Zip/Postal Code:** 55802 **Country:** USA
Report To (Name): Scott Carney	**Fax #:**
Telephone #: (218) 625-2331	**Email Address:**
Project Name/Number: BNSF 2009 OSHA / 5539.130	
Please Provide Results: ☐ Fax ■ Email	**Purchase Order:** **U.S. State Samples Taken:** MT

Turnaround Time (TAT) Options* – Please Check

☐ 3 Hours ☐ 6 Hours ■ 24 Hrs ☐ 48 Hrs ☐ 3 Days ☐ 4 Days ☐ 5 Days ☐ 10 Days

*For TEM Air 3 hours/6 hours, please call ahead to schedule.*There is a premium charge for 3 Hour TEM AHERA or EPA Level II TAT. You will be asked to sign an authorization form for this service. Analysis completed in accordance with EMSL's Terms and Conditions located in the Analytical Price Guide.

PCM - Air
- ☐ NIOSH 7400
- ☐ w/ OSHA 8hr. TWA

PLM - Bulk (reporting limit)
- ☐ PLM EPA 600/R-93/116 (<1%)
- ☐ PLM EPA NOB (<1%)

Point Count
- ☐ 400 (<0.25%) ☐ 1000 (<0.1%)

Point Count w/Gravimetric
- ☐ 400 (<0.25%) ☐ 1000 (<0.1%)
- ☐ NYS 198.1 (friable in NY)
- ☐ NYS 198.6 NOB (non-friable-NY)
- ☐ NIOSH 9002 (<1%)

TEM - Air
- ■ AHERA 40 CFR, Part 763
- ☐ NIOSH 7402
- ☐ EPA Level II
- ☐ ISO 10312

TEM - Bulk
- ☐ TEM EPA NOB
- ☐ NYS NOB 198.4 (non-friable-NY)
- ☐ Chatfield SOP
- ☐ TEM Mass Analysis-EPA 600 sec. 2.5

TEM – Water: EPA 100.2
- Fibers >10µm ☐ Waste ☐ Drinking
- All Fiber Sizes ☐ Waste ☐ Drinking

TEM- Dust
- ☐ Microvac - ASTM D 5755
- ☐ Wipe - ASTM D6480
- ☐ Carpet Sonication (EPA 600/J-93/167)

Soil/Rock/Vermiculite
- ☐ PLM CARB 435 - A (0.25% sensitivity)
- ☐ PLM CARB 435 - B (0.1% sensitivity)
- ☐ TEM CARB 435 - B (0.1% sensitivity)
- ☐ TEM CARB 435 - C (0.01% sensitivity)
- ☐ EPA Protocol (Semi-Quantitative)
- ☐ EPA Protocol (Quantitative)

Other:
- ☐

☐ **Check For Positive Stop – Clearly Identify Homogenous Group**

Samplers Name: Michael McKay **Samplers Signature:** Michael McKay

	Sample #	Sample Description	Volume/Area (Air) HA # (Bulk)		Date/Time Sampled
	P-DC052009	Profiler-David Castro-Rail Machine	1516		5/20/09 07:12-16:44
OL	P-KF052009	Profiler-Keith Francis-Rail Machine	1568		5/20/09 07:13-16:43
OL	P-LP052009	Operator-Leroy Paulson-Rail Machine	1345		5/20/09 07:14-15:32
OL	P-DW052009	Profiler-Duane Williams-Rail Machine	1340		5/20/09 07:15-16:45
	P-JT052009	Operator-Jesus Tovar-Rail Machine	1170		5/20/09 07:16-15:34
OL	P-RH-052009	Operator-Rex Hanna-Rail Machine	1148		5/20/09 07:17-15:36
	A-RB052009	River Bluff along tracks MP 1318	1560		5/20/09 09:50-13:05
	A-BB052009	Bluff Base along Tracks MP 1318	1560		5/20/09 09:51-13:06

Client Sample # (s):

Total # of Samples: 8

Relinquished (Client): Michael McKay **Date:** 5/21/09 **Time:** 10:30

Received (Lab): K.K Mahoney **Date:** 5/21/09 **Time:** 1030

Comments/Special Instructions:

P = Personal A = Area B = Blank (Opened)

EMSL ANALYTICAL, INC.
LABORATORY • PRODUCTS • TRAINING

Asbestos Chain of Custody

EMSL Order Number *(Lab Use Only)*: 5539 052009-01

EMSL ANALYTICAL, INC.
107 HADDON AVENUE
WESTMONT, NJ 08108
PHONE: (856) 858-4800
FAX: (856) 858-4960

Company: EMR	**EMSL-Bill to:** ☐ Same ☐ Different If Bill to is Different note instructions in Comments**
Street: 11 East Superior St Suite 260	*Third Party Billing requires written authorization from third party*
City: Duluth **State/Province:** MN	**Zip/Postal Code:** 55802 **Country:** USA
Report To (Name): Scott Carney	**Fax #:**
Telephone #: (218) 625-2331	**Email Address:**
Project Name/Number: BNSF 2009 OSHA / 5539.130	
Please Provide Results: ☐ Fax ■ Email	**Purchase Order:** **U.S. State Samples Taken:**

Turnaround Time (TAT) Options* – Please Check

☐ 3 Hours ☐ 6 Hours ■ 24 Hrs ☐ 48 Hrs ☐ 3 Days ☐ 4 Days ☐ 5 Days ☐ 10 Days

**For TEM Air 3 hours/6 hours, please call ahead to schedule.*There is a premium charge for 3 Hour TEM AHERA or EPA Level II TAT. You will be asked to sign an authorization form for this service. Analysis completed in accordance with EMSL's Terms and Conditions located in the Analytical Price Guide.*

PCM - Air
- ☐ NIOSH 7400
- ☐ w/ OSHA 8hr. TWA

PLM - Bulk (reporting limit)
- ☐ PLM EPA 600/R-93/116 (<1%)
- ☐ PLM EPA NOB (<1%)

Point Count
- ☐ 400 (<0.25%) ☐ 1000 (<0.1%)

Point Count w/Gravimetric
- ☐ 400 (<0.25%) ☐ 1000 (<0.1%)
- ☐ NYS 198.1 (friable in NY)
- ☐ NYS 198.6 NOB (non-friable-NY)
- ☐ NIOSH 9002 (<1%)

TEM - Air
- ■ AHERA 40 CFR, Part 763
- ☐ NIOSH 7402
- ☐ EPA Level II
- ☐ ISO 10312

TEM - Bulk
- ☐ TEM EPA NOB
- ☐ NYS NOB 198.4 (non-friable-NY)
- ☐ Chatfield SOP
- ☐ TEM Mass Analysis-EPA 600 sec. 2.5

TEM – Water: EPA 100.2
- Fibers >10µm ☐ Waste ☐ Drinking
- All Fiber Sizes ☐ Waste ☐ Drinking

TEM- Dust
- ☐ Microvac - ASTM D 5755
- ☐ Wipe - ASTM D6480
- ☐ Carpet Sonication (EPA 600/J-93/167)

Soil/Rock/Vermiculite
- ☐ PLM CARB 435 - A (0.25% sensitivity)
- ☐ PLM CARB 435 - B (0.1% sensitivity)
- ☐ TEM CARB 435 - B (0.1% sensitivity)
- ☐ TEM CARB 435 - C (0.01% sensitivity)
- ☐ EPA Protocol (Semi-Quantitative)
- ☐ EPA Protocol (Quantitative)

Other:
- ☐

☐ **Check For Positive Stop – Clearly Identify Homogenous Group**

Samplers Name: Michael McKay **Samplers Signature:** Michael McKay

Sample #	Sample Description	Volume/Area (Air) HA # (Bulk)	Date/Time Sampled
B-BK 052009	Field Blank - Opened	J	5/20/09

Client Sample # (s): - **Total # of Samples:** 9

Relinquished (Client): Michael McKay **Date:** 5/21/09 **Time:** 10:30

Received (Lab): R.K. Mahony **Date:** 5/21/09 **Time:** 10:30

Comments/Special Instructions:

B = Blank (Opened)

EMSL Analytical, Inc.
107 West 4th Street, Libby, MT 59923
Phone: (406) 293-9066 Fax: Email: mobileasbestoslab@emsl.com

Attn: **Scott Carney**
EMR, Inc.
11 East Superior Street
Suite 260
Duluth, MN 55802

Fax: (218) 625-2337 Phone: (218) 625-2332

Project: **5539 052009-01**
Samples collected 5/20/2009

Customer ID: EMRI78
Customer PO:
Received: 05/21/09 10:30 AM
EMSL Order: 270900129

EMSL Proj: BNSF 2009 OSHA
Analysis Date: 5/29/2009

Sampling Date: 5/20/2009

Asbestos Fiber Analysis by Transmission Electron Microscopy (TEM) Performed by EPA 40 CFR Part 763 Appendix A to Subpart E

Sample / Location	Volume (Liters)	Area Analyzed (mm^2)	Non Asb	Asbestos Type(s)	# Structures ≥ 0.5µ < 5µ	# Structures ≥5µ	Analytical Sensitivity (S/cc)	Asbestos Concentration (S/mm^2)	Asbestos Concentration (S/cc)
P-DC 052009 *270900129-0001*	1516.00	0.0520		None Detected			0.0049	**<19.00**	**<0.0049**
P-JT 052009 *270900129-0005*	1170.00	0.0780		None Detected			0.0042	**<13.00**	**<0.0042**
A-RB 052009 *270900129-0007*	1560.00	0.0520		None Detected			0.0047	**<19.00**	**<0.0047**
A-BB 052009 *270900129-0008*	1560.00	0.0520		None Detected			0.0047	**<19.00**	**<0.0047**
B-BK 052009 *270900129-0009* Field Blank		0.1300		None Detected				**<7.70**	

Analyst(s)

Roy Pescador (5)

R. K. Mahoney, Laboratory Manager
or other approved signatory

Disclaimers: The laboratory is not responsible for data reported in structures/cc, which is dependent on volume collected by non-laboratory personnel. This lab is only responsible for data reported in structures/mm^2. This report may not be reproduced, except in full, without written approval by EMSL. This report must not be used to claim product endorsement by NVLAP or any agency of the U.S. Government. This report relates only to the samples reported above. Quality control data (including 95% confidence limits and laboratory and analysts' accuracy and precision) is available upon request. As per 40 CFR 763, the initial screening test may not be applied to samples with collected volumes of <1200 liters. The test results contained within this report meet the requirements of NELAC unless otherwise noted. Samples received in good condition unless otherwise noted.
Accredited for NVLAP PLM/TEM. NVLAP Libby code: 200745-0

THIS IS THE LAST PAGE OF THE REPORT.

EMSL Analytical, Inc.
107 West 4th Street, Libby, MT 59923
Phone: (406) 293-9066 Fax: Email: mobileasbestoslab@emsl.com

Attn: **Scott Carney**
EMR, Inc.
11 East Superior Street
Suite 260
Duluth, MN 55802

Fax: (218) 625-2337 Phone: (218) 625-2332
Project: **5539 052009-01**
Samples collected 5/20/2009

Customer ID: EMRI78
Customer PO:
Received: 05/21/09 10:30 AM
EMSL Order: 270900129

EMSL Proj: BNSF 2009 OSHA
Analysis Date: 5/29/2009

Sampling Date: 5/20/2009

Asbestos Fiber Analysis by Transmission Electron Microscopy (TEM) Performed by AHERA -EPA 40 CFR Part 763 Appendix A to Subpart E (Modified for Indirect Prep)

Sample	*Location*	*Volume (Liters)*	*Area Analyzed (mm^2)*	*Non Asb*	*Asbestos Type(s)*	*# Structures* $\geq 0.5\mu < 5\mu$	*# Structures* $\geq 5\mu$	*Analytical Sensitivity (S/cc)*	*Total Asbestos Concentration (S/mm^2)*	*Total Asbestos Concentration (S/cc)*
P-KF 052009 *270900129-0002*		1568.00	0.1300		None Detected			0.0071	**<29.00**	**<0.0071**
P-LP 052009 *270900129-0003*		1345.00	0.1170		None Detected			0.0046	**<16.00**	**<0.0046**
P-DW 052009 *270900129-0004*		1340.00	0.1300		None Detected			0.1400	**<480.00**	**<0.1400**
P-RH 052009 *270900129-0006*		1148.00	0.1300		None Detected			0.0048	**<14.00**	**<0.0048**

Analyst(s)

Roy Pescador (4)

R. K. Mahoney, Laboratory Manager
or other approved signatory

THIS IS THE LAST PAGE OF THE REPORT.

BNSF 2009 OSHA
TEM Asbestos Structure Count

Laboratory name:	EMSL27
Instrument	JEOL 100 CX II (27-2)
Voltage (KV)	100
Magnification	19,000 X
Grid opening area (mm2)	0.013
Scale: 1L =	1
Scale: 1D =	1
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	360
Category (Field, Rep., Dup., Blank)	Field
Primary filter pore size (um)	0.8

EPA Sample Number:	P-X 052009
Sample Type (A=Air, D=Dust, DF = Dustfall):	A
Air volume (L), dust area (cm2), or dustfall container area (cm2)	1516
Date received by lab	5/21/2009
Lab Job Number:	270900129
Lab Sample Number:	270900129-0001
Number of grids prepared	3
Prepared by	R. Pescador
Preparation date	5/29/2009
EPA COC Number:	5539 052009-01
Secondary filter pore size (um)	0.2

Analyzed by	R. Pescador
Analysis date	5/29/2009
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
If sample type = air, is there loose material or debris in the cowl? (Yes, No)	No
Counting rules (ISO, AHERA, ASTM)	AHERA
Grid storage location	2709-EMR-49, H
Archive filter(s) storage location	Westmont
QA Type (Not QA, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interlab)	Not QA

F-Factor Calculation (Indirect Preps Only):

Enter data in appropriate cells provided to the right----->

Recording Rules:

Minimum Aspect Ratio (circle one): none ≥ 3:1 (≥ 5:1 circled)

Minimum Length (um):	0.5
Minimum Width (um):	None

Stopping Rules:

Target Sensitivity:	0.005
Max # of GOs:	4
Target # of Structures:	

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		Identification	Mineral Class (see below)				Sketch/ Comments	1 = yes, blank = no			Fract. GO Chrys.
			Primary	Total	Length	Width		LA	OA	C	NAM		Sketch	Photo	EDS	
1	D3	ND														
	F3	ND														
2	D2	ND														
	H1	ND														

RP 5/29/09

LA = Libby-type amphibole OA = Other (non-Libby type) amphibole C = Chrysotile NAM = Non-asbestos material

F-factor Calculation:

Indirect Prep Inputs

	Fraction of primary filter used for indirect prep or ashing *[For dust and dustfall, enter 1.0]*
	First resuspension volume or rinsate volume (mL)
	Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

	Second resuspension volume (mL)
	Volume applied to secondary filter (mL) or used for serial dilution
	Third resuspension volume (mL)
	Volume applied to secondary filter (mL)

Input for Ashing of Secondary Filter

	Fraction of secondary filter used for ashing

Grid opening traverse direction (circle one): H Horizontal; (V circled) Vertical

Are prepped grids acceptable for analysis? (circle one) (Yes circled) No

If No, explain:

BNSF 2009 OSHA
TEM Asbestos Structure Count

Laboratory name:	EMSL27
Instrument	JEOL 100 CX II (27-2)
Voltage (KV)	100
Magnification	19,000 X
Grid opening area (mm2)	0.013
Scale: 1L =	1
Scale: 1D =	1
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	340
Category (Field, Rep., Dup., Blank)	Field
Primary filter pore size (um)	0.8

EPA Sample Number:	P-KF 052009
Sample Type (A=Air, D=Dust, DF = Dustfall):	A
Air volume (L), dust area (cm2), or dustfall container area (cm2)	1568
Date received by lab	5/21/2009
Lab Job Number:	270900129
Lab Sample Number:	270900129-0002
Number of grids prepared	
Prepared by	
Preparation date	
EPA COC Number:	5539 052009-01
Secondary filter pore size (um)	0.2

Analyzed by	
Analysis date	
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
If sample type = air, is there loose material or debris in the cowl? (Yes, No)	YES
Counting rules (ISO, AHERA, ASTM)	AHERA
Grid storage location	
Archive filter(s) storage location	Westmont
QA Type (Not QA, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interlab)	Not QA

F-Factor Calculation (Indirect Preps Only):

Enter data in appropriate cells provided to the right---->

Recording Rules:

Minimum Aspect Ratio (circle one): none ≥ 3:1 (≥ 5:1)

Minimum Length (um): 0.5

Minimum Width (um): None

Stopping Rules:

Target Sensitivity: 0.005

Max # of GOs: 4

Target # of Structures:

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		Identification	Mineral Class (see below)				Sketch/ Comments	1 = yes, blank = no			Fract. GO Chrys.
			Primary	Total	Length	Width		LA	OA	C	NAM		Sketch	Photo	EDS	
		OVERLOADED														

LA = Libby-type amphibole

OA = Other (non-Libby type) amphibole

C = Chrysotile

NAM = Non-asbestos material

F-factor Calculation:

Indirect Prep Inputs

- Fraction of primary filter used for indirect prep or ashing *[For dust and dustfall, enter 1.0]*
- First resuspension volume or rinsate volume (mL)
- Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

- Second resuspension volume (mL)
- Volume applied to secondary filter (mL) or used for serial dilution
- Third resuspension volume (mL)
- Volume applied to secondary filter (mL)

Input for Ashing of Secondary Filter

- Fraction of secondary filter used for ashing

Grid opening traverse direction (circle one):

H Horizontal

V Vertical

Are prepped grids acceptable for analysis? (circle one) Yes No

If No, explain:

BNSF 2009 OSHA
TEM Asbestos Structure Count

Laboratory name:	EMSL27
Instrument	JEOL 100 CX II (27-2)
Voltage (KV)	100
Magnification	19,000 X
Grid opening area (mm2)	0.013
Scale: 1L =	1
Scale: 1D =	1
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	360
Category (Field, Rep., Dup., Blank)	Field
Primary filter pore size (um)	0.8

EPA Sample Number:	P-KF052009
Sample Type (A=Air, D=Dust, DF = Dustfall):	A
Air volume (L), dust area (cm2), or dustfall container area (cm2)	1568
Date received by lab	5/21/2009
Lab Job Number:	270900129
Lab Sample Number:	270900129-0002
Number of grids prepared	3
Prepared by	R. Pescador
Preparation date	5/29/2009
EPA COC Number:	5539 052009-01
Secondary filter pore size (um)	0.2

Analyzed by	R. Pescador
Analysis date	5/29/2009
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	IA
If sample type = air, is there loose material or debris in the cowl? (Yes, No)	YES ~~No~~ RMP 5/29/09
Counting rules (ISO, AHERA, ASTM)	AHERA
Grid storage location	2709-EMR-49, H
Archive filter(s) storage location	Westmont
QA Type (Not QA, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interlab)	Not QA

F-Factor Calculation (Indirect Preps Only):

Enter data in appropriate cells provided to the right----->

Recording Rules:

Minimum Aspect Ratio (circle one):	none	≥ 3:1 (≥ 5:1)
Minimum Length (um):	0.5	
Minimum Width (um):	None	

Stopping Rules:

Target Sensitivity:	0.005
Max # of GOs:	10
Target # of Structures:	

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		Identification	Mineral Class (see below)				Sketch/ Comments	1 = yes, blank = no			Fract. GO Chrys.
			Primary	Total	Length	Width		LA	OA	C	NAM		Sketch	Photo	EDS	
1	H2	ND														
	H4	ND														
	H6	ND														
	E7	ND														
	E9	ND														
2	G1	ND														
	G3	ND														
	G5	ND														
	G7	ND														
	G9	ND														

F-factor Calculation:

Indirect Prep Inputs

1.0	Fraction of primary filter used for indirect prep or ashing *[For dust and dustfall, enter 1.0]*
100	First resuspension volume or rinsate volume (mL)
250	Volume applied to secondary filter (mL) or used for serial dilution RMP 5/29/09

Inputs for Serial Dilutions

	Second resuspension volume (mL)
	Volume applied to secondary filter (mL) or used for serial dilution
	Third resuspension volume (mL)
	Volume applied to secondary filter (mL)

Input for Ashing of Secondary Filter

	Fraction of secondary filter used for ashing

LA = Libby-type amphibole

OA = Other (non-Libby type) amphibole

C = Chrysotile

NAM = Non-asbestos material

Grid opening traverse direction (circle one):

H Horizontal

(V) Vertical

Are prepped grids acceptable for analysis? (circle one) (Yes) No

If No, explain:

BNSF 2009 OSHA
TEM Asbestos Structure Count

Laboratory name:	EMSL27
Instrument	JEOL 100 CX II (27-2)
Voltage (KV)	100
Magnification	19,000 X
Grid opening area (mm2)	0.013
Scale: 1L =	1
Scale: 1D =	1
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	360
Category (Field, Rep., Dup., Blank)	Field
Primary filter pore size (um)	0.8

EPA Sample Number:	P-LP 052009
Sample Type (A=Air, D=Dust, DF = Dustfall):	A
Air volume (L), dust area (cm2), or dustfall container area (cm2)	1345
Date received by lab	5/21/2009
Lab Job Number:	270900129
Lab Sample Number:	270900129-0003
Number of grids prepared	
Prepared by	
Preparation date	
EPA COC Number:	5539 052009-01
Secondary filter pore size (um)	0.2

Analyzed by	
Analysis date	
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
If sample type = air, is there loose material or debris in the cowl? (Yes, No)	YES
Counting rules (ISO, AHERA, ASTM)	AHERA
Grid storage location	
Archive filter(s) storage location	Westmont
QA Type (Not QA, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interlab)	Not QA

F-Factor Calculation (Indirect Preps Only):

Enter data in appropriate cells provided to the right---->

Recording Rules:

Minimum Aspect Ratio (circle one): none ≥ 3:1 (≥ 5:1)

Minimum Length (um): 0.5

Minimum Width (um): None

Stopping Rules:

Target Sensitivity: 0.005

Max # of GOs: 5

Target # of Structures:

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		Identification	Mineral Class (see below)				Sketch/ Comments	1 = yes, blank = no			Fract. GO Chrys.
			Primary	Total	Length	Width		LA	OA	C	NAM		Sketch	Photo	EDS	
			OVERLOADED													

LA = Libby-type amphibole

OA = Other (non-Libby type) amphibole

C = Chrysotile

NAM = Non-asbestos material

F-factor Calculation:

Indirect Prep Inputs

- Fraction of primary filter used for indirect prep or ashing *[For dust and dustfall, enter 1.0]*
- First resuspension volume or rinsate volume (mL)
- Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

- Second resuspension volume (mL)
- Volume applied to secondary filter (mL) or used for serial dilution
- Third resuspension volume (mL)
- Volume applied to secondary filter (mL)

Input for Ashing of Secondary Filter

- Fraction of secondary filter used for ashing

Grid opening traverse direction (circle one):

H Horizontal

V Vertical

Are prepped grids acceptable for analysis? (circle one) Yes No

If No, explain:

BNSF 2009 OSHA
TEM Asbestos Structure Count

Laboratory name:	EMSL27
Instrument	JEOL 100 CX II (27-2)
Voltage (KV)	100
Magnification	19,000 X
Grid opening area (mm2)	0.013
Scale: 1L =	1
Scale: 1D =	1
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	360
Category (Field, Rep., Dup., Blank)	Field
Primary filter pore size (um)	0.8

EPA Sample Number:	P-4052009
Sample Type (A=Air, D=Dust, DF = Dustfall):	A
Air volume (L), dust area (cm2), or dustfall container area (cm2)	1345
Date received by lab	5/21/2009
Lab Job Number:	270900129
Lab Sample Number:	270900129-0003
Number of grids prepared	3
Prepared by	R. Pescador
Preparation date	5/29/2009
EPA COC Number:	5539 052009-01
Secondary filter pore size (um)	0.2

Analyzed by	R. Pescador
Analysis date	5/29/2009
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	IA
If sample type = air, is there loose material or debris in the cowl? (Yes, No)	Yes No 5/29/09 mrj
Counting rules (ISO, AHERA, ASTM)	AHERA
Grid storage location	2709-EMR-49, H
Archive filter(s) storage location	Westmont
QA Type (Not QA, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interlab)	Not QA

F-Factor Calculation (Indirect Preps Only):
Enter data in appropriate cells provided to the right----->

Recording Rules:

Minimum Aspect Ratio (circle one):	none ≥ 3:1 (≥ 5:1)
Minimum Length (um):	0.5
Minimum Width (um):	None

Stopping Rules:

Target Sensitivity:	0.005
Max # of GOs:	9
Target # of Structures:	

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		Identification	Mineral Class (see below)				Sketch/ Comments	1 = yes, blank = no			Fract. GO Chrys.
			Primary	Total	Length	Width		LA	OA	C	NAM		Sketch	Photo	EDS	
1	H1	ND														
	H3	ND														
	H5	ND														
	H7	ND														
	H9	ND														
2	C10	ND														
	C8	ND														
	C6	ND														
	C4	ND														
			5/29/09													

F-factor Calculation:

Indirect Prep Inputs

1.0	Fraction of primary filter used for indirect prep or ashing *[For dust and dustfall, enter 1.0]*
100	First resuspension volume or rinsate volume (mL)
50	Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

	Second resuspension volume (mL)
	Volume applied to secondary filter (mL) or used for serial dilution
	Third resuspension volume (mL)
	Volume applied to secondary filter (mL)

Input for Ashing of Secondary Filter

	Fraction of secondary filter used for ashing

LA = Libby-type amphibole OA = Other (non-Libby type) amphibole C = Chrysotile NAM = Non-asbestos material

Grid opening traverse direction (circle one):
H Horizontal
(V) Vertical

Are prepped grids acceptable for analysis? (circle one) (Yes) No
If No, explain:

BNSF 2009 OSHA
TEM Asbestos Structure Count

Laboratory name:	EMSL27
Instrument	JEOL 100 CX II (27-2)
Voltage (KV)	100
Magnification	19,000 X
Grid opening area (mm2)	0.013
Scale: 1L =	1
Scale: 1D =	1
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	960
Category (Field, Rep., Dup., Blank)	Field
Primary filter pore size (um)	0.8

EPA Sample Number:	P-DW 052009
Sample Type (A=Air, D=Dust, DF = Dustfall):	A
Air volume (L), dust area (cm2), or dustfall container area (cm2)	1340
Date received by lab	5/21/2009
Lab Job Number:	270900129
Lab Sample Number:	270900129-0004
Number of grids prepared	
Prepared by	
Preparation date	
EPA COC Number:	5539 052009-01
Secondary filter pore size (um)	0.2

Analyzed by	
Analysis date	
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
If sample type = air, is there loose material or debris in the cowl? (Yes, No)	YES
Counting rules (ISO, AHERA, ASTM)	AHERA
Grid storage location	
Archive filter(s) storage location	Westmont
QA Type (Not QA, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interlab)	Not QA

F-Factor Calculation (Indirect Preps Only):

Enter data in appropriate cells provided to the right---->

Recording Rules:

Minimum Aspect Ratio (circle one): none ≥ 3:1 (≥ 5:1)

Minimum Length (um): 0.5

Minimum Width (um): None

Stopping Rules:

Target Sensitivity: 0.005

Max # of GOs: 5

Target # of Structures:

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		Identification	Mineral Class (see below)				Sketch/ Comments	1 = yes, blank = no			Fract. GO Chrys.
			Primary	Total	Length	Width		LA	OA	C	NAM		Sketch	Photo	EDS	
		OVERLOADED														

LA = Libby-type amphibole

OA = Other (non-Libby type) amphibole

C = Chrysotile

NAM = Non-asbestos material

Grid opening traverse direction (circle one):

H Horizontal

V Vertical

Are prepped grids acceptable for analysis? (circle one) Yes No

If No, explain:

F-factor Calculation:

Indirect Prep Inputs

- Fraction of primary filter used for indirect prep or ashing *(For dust and dustfall, enter 1.0)*
- First resuspension volume or rinsate volume (mL)
- Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

- Second resuspension volume (mL)
- Volume applied to secondary filter (mL) or used for serial dilution
- Third resuspension volume (mL)
- Volume applied to secondary filter (mL)

Input for Ashing of Secondary Filter

- Fraction of secondary filter used for ashing

BNSF 2009 OSHA
TEM Asbestos Structure Count

Laboratory name:	EMSL-27
Instrument	JEOL 100 CX II (27-2)
Voltage (KV)	100
Magnification	19,000 X
Grid opening area (mm2)	0.013
Scale: 1L =	1
Scale: 1D =	1
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	360
Category (Field, Rep., Dup., Blank)	Field
Primary filter pore size (um)	0.8

EPA Sample Number:	P-[illegible]052009
Sample Type (A=Air, D=Dust, DF = Dustfall):	A
Air volume (L), dust area (cm2), or dustfall container area (cm2)	1340
Date received by lab	5/21/2009
Lab Job Number:	270900129
Lab Sample Number:	270900129-0004
Number of grids prepared	3
Prepared by	R. Pescador
Preparation date	5/29/2009
EPA COC Number:	5539 052009-01
Secondary filter pore size (um)	0.2

Analyzed by	R. Pescador
Analysis date	5/29/2009
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	IA
If sample type = air, is there loose material or debris in the cowl? (Yes, No)	~~Yes~~ ~~No~~ AMV 5/29/09
Counting rules (ISO, AHERA, ASTM)	AHERA
Grid storage location	2709-EMR-49, I
Archive filter(s) storage location	Westmont
QA Type (Not QA, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interlab)	Not QA

F-Factor Calculation (Indirect Preps Only):

Enter data in appropriate cells provided to the right----->

Recording Rules:	
Minimum Aspect Ratio (circle one):	none ≥ 3:1 (≥ 5:1)
Minimum Length (um):	0.5
Minimum Width (um):	None

Stopping Rules:	
Target Sensitivity:	0.005
Max # of GOs:	10
Target # of Structures:	

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		Identification	Mineral Class (see below)				Sketch/ Comments	1 = yes, blank = no			Fract. GO Chrys.
			Primary	Total	Length	Width		LA	OA	C	NAM		Sketch	Photo	EDS	
1	E6	ND														
	E8	ND														
	E10	ND														
	B7	ND														
	B9	ND														
2	D9	ND														
	D7	ND														
	D5	ND														
	D3	ND														
	D1	ND														

F-factor Calculation:

Indirect Prep Inputs

1.0	Fraction of primary filter used for indirect prep or ashing *[For dust and dustfall, enter 1.0]*
100	First resuspension volume or rinsate volume (mL)
10	Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

100	Second resuspension volume (mL)
15	Volume applied to secondary filter (mL) or used for serial dilution
	Third resuspension volume (mL)
	Volume applied to secondary filter (mL)

Input for Ashing of Secondary Filter

	Fraction of secondary filter used for ashing

LA = Libby-type amphibole OA = Other (non-Libby type) amphibole C = Chrysotile NAM = Non-asbestos material

Grid opening traverse direction (circle one):
H Horizontal
(V) Vertical

Are prepped grids acceptable for analysis? (circle one) (Yes) No

If No, explain:

BNSF 2009 OSHA
TEM Asbestos Structure Count

Laboratory name:	EMSL27
Instrument	JEOL 100 CX II (27-2)
Voltage (KV)	100
Magnification	19,000 X
Grid opening area (mm2)	0.013
Scale: 1L =	1
Scale: 1D =	1
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	360
Category (Field, Rep., Dup., Blank)	Field
Primary filter pore size (um)	0.8

EPA Sample Number:	P-JT 052009
Sample Type (A=Air, D=Dust, DF = Dustfall):	A
Air volume (L), dust area (cm2), or dustfall container area (cm2)	1170
Date received by lab	5/21/2009
Lab Job Number:	270900129
Lab Sample Number:	270900129-0005
Number of grids prepared	3
Prepared by	R. Pescador
Preparation date	5/29/2009
EPA COC Number:	5539 052009-01
Secondary filter pore size (um)	0.2

Analyzed by	R. Pescador
Analysis date	5/29/2009
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
If sample type = air, is there loose material or debris in the cowl? (Yes, No)	No
Counting rules (ISO, AHERA, ASTM)	AHERA
Grid storage location	2709-EMR-49, I
Archive filter(s) storage location	Westmont
QA Type (Not QA, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interlab)	Not QA

F-Factor Calculation (Indirect Preps Only):

Enter data in appropriate cells provided to the right----->

Recording Rules:

Minimum Aspect Ratio (circle one):	none ≥ 3:1 (≥ 5:1)
Minimum Length (um):	0.5
Minimum Width (um):	None

Stopping Rules:

Target Sensitivity:	0.005
Max # of GOs:	6
Target # of Structures:	

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		Identification	Mineral Class (see below)				Sketch/ Comments	1 = yes, blank = no			Fract. GO Chrys.
			Primary	Total	Length	Width		LA	OA	C	NAM		Sketch	Photo	EDS	
1	G5	ND														
	G3	ND														
	G1	ND														
2	D7	ND														
	D5	ND														
	D3	ND														

No Asbestos

F-factor Calculation:

Indirect Prep Inputs

	Fraction of primary filter used for indirect prep or ashing *[For dust and dustfall, enter 1.0]*
	First resuspension volume or rinsate volume (mL)
	Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

	Second resuspension volume (mL)
	Volume applied to secondary filter (mL) or used for serial dilution
	Third resuspension volume (mL)
	Volume applied to secondary filter (mL)

Input for Ashing of Secondary Filter

	Fraction of secondary filter used for ashing

LA = Libby-type amphibole OA = Other (non-Libby type) amphibole C = Chrysotile NAM = Non-asbestos material

Grid opening traverse direction (circle one):

H Horizontal

(V) Vertical

Are prepped grids acceptable for analysis? (circle one) (Yes) No

If No, explain:

BNSF 2009 OSHA
TEM Asbestos Structure Count

Laboratory name:	EMSL27
Instrument	JEOL 100 CX II (27-2)
Voltage (KV)	100
Magnification	19,000 X
Grid opening area (mm2)	0.013
Scale: 1L =	1
Scale: 1D =	1
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	3600
Category (Field, Rep., Dup., Blank)	Field
Primary filter pore size (um)	0.8

EPA Sample Number:	P-RH 052009
Sample Type (A=Air, D=Dust, DF = Dustfall):	A
Air volume (L), dust area (cm2), or dustfall container area (cm2)	1148
Date received by lab	5/21/2009
Lab Job Number:	270900129
Lab Sample Number:	270900129-0006
Number of grids prepared	
Prepared by	
Preparation date	
EPA COC Number:	5539 052009-01
Secondary filter pore size (um)	0.2

Analyzed by	
Analysis date	
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
If sample type = air, is there loose material or debris in the cowl? (Yes, No)	NO
Counting rules (ISO, AHERA, ASTM)	AHERA
Grid storage location	
Archive filter(s) storage location	Westmont
QA Type (Not QA, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interlab)	Not QA

F-Factor Calculation (Indirect Preps Only):

Enter data in appropriate cells provided to the right----->

Recording Rules:

Minimum Aspect Ratio (circle one):

none ≥ 3:1 (≥ 5:1)

Minimum Length (um):	0.5
Minimum Width (um):	None

Stopping Rules:

Target Sensitivity:	0.005
Max # of GOs:	6
Target # of Structures:	

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		Identification	Mineral Class (see below)				Sketch/ Comments	1 = yes, blank = no			Fract. GO Chrys.
			Primary	Total	Length	Width		LA	OA	C	NAM		Sketch	Photo	EDS	
		OVERLOADED														

F-factor Calculation:

Indirect Prep Inputs

- Fraction of primary filter used for indirect prep or ashing *(For dust and dustfall, enter 1.0)*
- First resuspension volume or rinsate volume (mL)
- Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

- Second resuspension volume (mL)
- Volume applied to secondary filter (mL) or used for serial dilution
- Third resuspension volume (mL)
- Volume applied to secondary filter (mL)

Input for Ashing of Secondary Filter

- Fraction of secondary filter used for ashing

LA = Libby-type amphibole

OA = Other (non-Libby type) amphibole

C = Chrysotile

NAM = Non-asbestos material

Grid opening traverse direction (circle one):

H Horizontal

V Vertical

Are prepped grids acceptable for analysis? (circle one) Yes No

If No, explain:

_____

_____

BNSF 2009 OSHA
TEM Asbestos Structure Count

Laboratory name:	EMSL27
Instrument	JEOL 100 CX II (27-2)
Voltage (KV)	100
Magnification	19,000 X
Grid opening area (mm2)	0.013
Scale: 1L =	1
Scale: 1D =	1
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	360
Category (Field, Rep., Dup., Blank)	Field
Primary filter pore size (um)	0.8

EPA Sample Number:	P-[illegible]052009
Sample Type (A=Air, D=Dust, DF = Dustfall):	A
Air volume (L), dust area (cm2), or dustfall container area (cm2)	1148
Date received by lab	5/21/2009
Lab Job Number:	270900129
Lab Sample Number:	270900129-0006
Number of grids prepared	3
Prepared by	R. Pescador
Preparation date	5/29/2009
EPA COC Number:	5539 052009-01
Secondary filter pore size (um)	0.2

Analyzed by	R. Pescador
Analysis date	5/29/2009
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	I
If sample type = air, is there loose material or debris in the cowl? (Yes, No)	No
Counting rules (ISO, AHERA, ASTM)	AHERA
Grid storage location	2709-EMR-49, I
Archive filter(s) storage location	Westmont
QA Type (Not QA, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interlab)	Not QA

F-Factor Calculation (Indirect Preps Only):
Enter data in appropriate cells provided to the right----->

Recording Rules:

Minimum Aspect Ratio (circle one):	none	≥ 3:1 ≥ 5:1
Minimum Length (um):	0.5	
Minimum Width (um):	None	

Stopping Rules:

Target Sensitivity:	0.005
Max # of GOs:	10
Target # of Structures:	

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		Identification	Mineral Class (see below)				Sketch/ Comments	1 = yes, blank = no			Fract. GO Chrys.
			Primary	Total	Length	Width		LA	OA	C	NAM		Sketch	Photo	EDS	
1	B9	ND														
	B7	ND														
	B5	ND														
	B3	ND														
	B1	ND														
2	G2	ND														
	G4	ND														
	G6	ND														
	G8	ND														
	G10	ND														

F-factor Calculation:

Indirect Prep Inputs

1.0	Fraction of primary filter used for indirect prep or ashing *[For dust and dustfall, enter 1.0]*
100	First resuspension volume or rinsate volume (mL)
50	Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

	Second resuspension volume (mL)
	Volume applied to secondary filter (mL) or used for serial dilution
	Third resuspension volume (mL)
	Volume applied to secondary filter (mL)

Input for Ashing of Secondary Filter

	Fraction of secondary filter used for ashing

LA = Libby-type amphibole OA = Other (non-Libby type) amphibole C = Chrysotile NAM = Non-asbestos material

Grid opening traverse direction (circle one):
H Horizontal
(V) Vertical

Are prepped grids acceptable for analysis? (circle one) (Yes) No
If No, explain:

BNSF 2009 OSHA
TEM Asbestos Structure Count

Laboratory name:	EMSL27
Instrument	JEOL 100 CX II (27-2)
Voltage (KV)	100
Magnification	19,000 X
Grid opening area (mm2)	0.013
Scale: 1L =	1
Scale: 1D =	1
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	360
Category (Field, Rep., Dup., Blank)	Field
Primary filter pore size (um)	0.8

EPA Sample Number:	A-IRB052009
Sample Type (A=Air, D=Dust, DF = Dustfall):	A
Air volume (L), dust area (cm2), or dustfall container area (cm2)	1560
Date received by lab	5/21/2009
Lab Job Number:	270900129
Lab Sample Number:	270900129-0007
Number of grids prepared	3
Prepared by	R. Pescador
Preparation date	5/29/2009
EPA COC Number:	5539 052009-01
Secondary filter pore size (um)	0.2

Analyzed by	R. Pescador
Analysis date	5/29/2009
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
If sample type = air, is there loose material or debris in the cowl? (Yes, No)	No
Counting rules (ISO, AHERA, ASTM)	AHERA
Grid storage location	2709-EMR-49, J
Archive filter(s) storage location	Westmont
QA Type (Not QA, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interlab)	Not QA

F-Factor Calculation (Indirect Preps Only):

Enter data in appropriate cells provided to the right----->

Recording Rules:

Minimum Aspect Ratio (circle one): none ≥ 3:1 (≥ 5:1)

Minimum Length (um): 0.5

Minimum Width (um): None

Stopping Rules:

Target Sensitivity: 0.005

Max # of GOs: 4

Target # of Structures:

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		Identification	Mineral Class (see below)				Sketch/ Comments	1 = yes, blank = no			Fract. GO Chrys.
			Primary	Total	Length	Width		LA	OA	C	NAM		Sketch	Photo	EDS	
1	C6	ND														
	C8	ND														
2	I5	ND														
	I7	ND														

F-factor Calculation:

Indirect Prep Inputs

- Fraction of primary filter used for indirect prep or ashing *(For dust and dustfall, enter 1.0)*
- First resuspension volume or rinsate volume (mL)
- Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

- Second resuspension volume (mL)
- Volume applied to secondary filter (mL) or used for serial dilution
- Third resuspension volume (mL)
- Volume applied to secondary filter (mL)

Input for Ashing of Secondary Filter

- Fraction of secondary filter used for ashing

LA = Libby-type amphibole OA = Other (non-Libby type) amphibole C = Chrysotile NAM = Non-asbestos material

Grid opening traverse direction (circle one):
H Horizontal
(V) Vertical

Are prepped grids acceptable for analysis? (circle one) (Yes) No

If No, explain:

BNSF 2009 OSHA
TEM Asbestos Structure Count

Laboratory name:	EMSL27
Instrument	JEOL 100 CX II (27-2)
Voltage (KV)	100
Magnification	19,000 X
Grid opening area (mm2)	0.013
Scale: 1L =	1
Scale: 1D =	1
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	360
Category (Field, Rep., Dup., Blank)	Field
Primary filter pore size (um)	0.8

EPA Sample Number:	A-BB052009
Sample Type (A=Air, D=Dust, DF = Dustfall):	A
Air volume (L), dust area (cm2), or dustfall container area (cm2)	1560
Date received by lab	5/21/2009
Lab Job Number:	270900129
Lab Sample Number:	270900129-0008
Number of grids prepared	3
Prepared by	R. Pescador
Preparation date	5/29/2009
EPA COC Number:	5539 052009-01
Secondary filter pore size (um)	0.2

Analyzed by	R. Pescador
Analysis date	5/29/2009
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
If sample type = air, is there loose material or debris in the cowl? (Yes, No)	No
Counting rules (ISO, AHERA, ASTM)	AHERA
Grid storage location	2709-EMR-49, J
Archive filter(s) storage location	Westmont
QA Type (Not QA, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interlab)	Not QA

F-Factor Calculation (Indirect Preps Only):
Enter data in appropriate cells provided to the right----->

Recording Rules:
Minimum Aspect Ratio (circle one): none ≥ 3:1 (≥ 5:1)
Minimum Length (um): 0.5
Minimum Width (um): None

Stopping Rules:
Target Sensitivity: 0.005
Max # of GOs: 4
Target # of Structures:

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		Identification	Mineral Class (see below)				Sketch/ Comments	1 = yes, blank = no			Fract. GO Chrys.
			Primary	Total	Length	Width		LA	OA	C	NAM		Sketch	Photo	EDS	
1	A7	ND														
	A9	ND														
2	H4	ND														
	H6	ND														

LA = Libby-type amphibole OA = Other (non-Libby type) amphibole C = Chrysotile NAM = Non-asbestos material

F-factor Calculation:

Indirect Prep Inputs
- Fraction of primary filter used for indirect prep or ashing *[For dust and dustfall, enter 1.0]*
- First resuspension volume or rinsate volume (mL)
- Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions
- Second resuspension volume (mL)
- Volume applied to secondary filter (mL) or used for serial dilution
- Third resuspension volume (mL)
- Volume applied to secondary filter (mL)

Input for Ashing of Secondary Filter
- Fraction of secondary filter used for ashing

Grid opening traverse direction (circle one):
H Horizontal
V Vertical

Are prepped grids acceptable for analysis? (circle one) (Yes) No
If No, explain:

BNSF 2009 OSHA
TEM Asbestos Structure Count

Laboratory name:	EMSL27
Instrument	JEOL 100 CX II (27-2)
Voltage (KV)	100
Magnification	19,000 X
Grid opening area (mm2)	0.013
Scale: 1L =	1
Scale: 1D =	1
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	360
Category (Field, Rep., Dup., Blank)	Blank
Primary filter pore size (um)	0.8

EPA Sample Number:	B-BK 052009
Sample Type (A=Air, D=Dust, DF = Dustfall):	A
Air volume (L), dust area (cm2), or dustfall container area (cm2)	0
Date received by lab	5/21/2009
Lab Job Number:	270900129
Lab Sample Number:	270900129-0009
Number of grids prepared	3
Prepared by	R. Pescador
Preparation date	5/29/2009
EPA COC Number:	5539 052009-01
Secondary filter pore size (um)	0.2

Analyzed by	R. Pescador
Analysis date	5/29/2009
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
If sample type = air, is there loose material or debris in the cowl? (Yes, No)	No
Counting rules (ISO, AHERA, ASTM)	AHERA
Grid storage location	2709-EMR-49, J
Archive filter(s) storage location	Westmont
QA Type (Not QA, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interlab)	Not QA

F-Factor Calculation (Indirect Preps Only):

Enter data in appropriate cells provided to the right----->

Recording Rules:

Minimum Aspect Ratio (circle one): none ≥ 3:1 (≥ 5:1)

Minimum Length (um): 0.5

Minimum Width (um): None

Stopping Rules:

Target Sensitivity:

Max # of GOs: 10

Target # of Structures:

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		Identification	Mineral Class (see below)				Sketch/ Comments	1 = yes, blank = no			Fract. GO Chrys.
			Primary	Total	Length	Width		LA	OA	C	NAM		Sketch	Photo	EDS	
1	I1	ND														
	I3	ND														
	I5	ND														
	I7	ND														
	I9	ND														
2	D10	ND														
	D8	ND														
	D6	ND														
	D4	ND														
	D2	ND														

F-factor Calculation:

Indirect Prep Inputs

- Fraction of primary filter used for indirect prep or ashing *[For dust and dustfall, enter 1.0]*
- First resuspension volume or rinsate volume (mL)
- Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

- Second resuspension volume (mL)
- Volume applied to secondary filter (mL) or used for serial dilution
- Third resuspension volume (mL)
- Volume applied to secondary filter (mL)

Input for Ashing of Secondary Filter

- Fraction of secondary filter used for ashing

LA = Libby-type amphibole

OA = Other (non-Libby type) amphibole

C = Chrysotile

NAM = Non-asbestos material

Grid opening traverse direction (circle one):

H Horizontal

(V) Vertical

Are prepped grids acceptable for analysis? (circle one) (Yes) No

If No, explain:

RD

BNSF 2009 OSHA
TEM Asbestos Structure Count

Laboratory name:	EMSL27
Instrument	JEOL 100 CX II (27-2)
Voltage (KV)	100
Magnification	19,000 X
Grid opening area (mm2)	0.013
Scale: 1L =	1
Scale: 1D =	1
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	360
Category (Field, Rep., Dup., Blank)	Field
Primary filter pore size (um)	0.8

EPA Sample Number:	B28052009
Sample Type (A=Air, D=Dust, DF = Dustfall):	A
Air volume (L), dust area (cm2), or dustfall container area (cm2)	1560
Date received by lab	5/21/2009
Lab Job Number:	270900129
Lab Sample Number:	270900129-0007
Number of grids prepared	3
Prepared by	R. Pescador
Preparation date	5/29/2009
EPA COC Number:	5539 052009-01
Secondary filter pore size (um)	0.2

Analyzed by	E.Wyatt-Pescador
Analysis date	5/29/2009
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
If sample type = air, is there loose material or debris in the cowl? (Yes, No)	No
Counting rules (ISO, AHERA, ASTM)	AHERA
Grid storage location	2709-EMR-49, J
Archive filter(s) storage location	Westmont
QA Type (Not QA, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interlab)	Recount Different

F-Factor Calculation (Indirect Preps Only):

Enter data in appropriate cells provided to the right----->

Recording Rules:

Minimum Aspect Ratio (circle one): none ≥ 3:1 (≥ 5:1)

Minimum Length (um): 0.5

Minimum Width (um): None

Stopping Rules:

Target Sensitivity: 0.005

Max # of GOs: 4

Target # of Structures:

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		Identification	Mineral Class (see below)				Sketch/ Comments	1 = yes, blank = no			Fract. GO Chrys.
			Primary	Total	Length	Width		LA	OA	C	NAM		Sketch	Photo	EDS	
1	C6	ND														
	C8	ND														
2	I5	ND														
	I7	ND														

Stop 5/29/09

F-factor Calculation:

Indirect Prep Inputs

- Fraction of primary filter used for indirect prep or ashing *[For dust and dustfall, enter 1.0]*
- First resuspension volume or rinsate volume (mL)
- Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

- Second resuspension volume (mL)
- Volume applied to secondary filter (mL) or used for serial dilution
- Third resuspension volume (mL)
- Volume applied to secondary filter (mL)

Input for Ashing of Secondary Filter

- Fraction of secondary filter used for ashing

LA = Libby-type amphibole

OA = Other (non-Libby type) amphibole

C = Chrysotile

NAM = Non-asbestos material

Grid opening traverse direction (circle one):

H Horizontal

(V) Vertical

Are prepped grids acceptable for analysis? (circle one) (Yes) No

If No, explain:

INTERNAL CHAIN OF CUSTODY

6/2/2009 9:06:56 AM

Order ID: 270900145

Attn: Scott Carney
EMR, Inc.
11 East Superior Street
Suite 260
Duluth, MN 55802

Fax: (218) 625-2337 Phone: (218) 625-2332

Project: **5539 052109-01**
Samples collected 5/21/2009

Customer ID: EMRI78
Customer PO:
Received: 05/27/09 10:50 AM

EMSL Order: 270900145
EMSL Proj ID: BNSF 2009 OSHA
Cust COC ID

Test: TEM AHERA **Matrix** Air **TAT:** 24 Hour **Qty:** 1

Acct Sts: **SIsprsn:** epodell **Logged:** rmahoney **Date:** 5/28/2009

Inter-Lab Sample Transfer

Samples Relinquished: _____ Date _____
Samples Received: _____ Date _____
Package Mailed to Westmont: _____ Date _____
Method of Delivery: _____

Includes: (Circle)
Benchsheets Sample Slides Sample filters
Micrographs GridBox Other _____

Final Package Received: _____ Date: _____

Sample Condition: Acceptable / Unacceptable

Comments

Initial Prep (Initials/Lab): RRV **Date:** 6/1/09
Filter Prep (Initials/Lab): RRV **Date:** 6/1/09
Grid Prep (Initials/Lab): RRV **Date:** 6/1/09

Special Instructions

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900145	270900145-0007	B-BK052109		5/28/2009 10:50:00 AM

LB, RP 2709-EMR-49(Q-T) 2709-EMR-ARC-50 (CH-1)

INTERNAL SAMPLE CHAIN OF CUSTODY

5/28/2009 6:45:05 AM

Order ID: 270900145

Attn: Scott Carney
EMR, Inc.
11 East Superior Street
Suite 260
Duluth, MN 55802

Fax: (218) 625-2337 Phone: (218) 625-2332

Project: **5539 052109-01**
Samples collected 5/21/2009

Customer ID: EMRI78
Customer PO:
Received: 05/27/09 10:50 AM

EMSL Order: 270900145
EMSL Proj ID: BNSF 2009 OSHA
Cust COC ID

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900145	270900145-0001	P-RH052109		5/21/2009

Comments:

ANALYZED:	RMY	**Date:**	6/2/09
Preliminary Data Sent to Special Projects:	RKm	**Date:**	6/2/09
Data Entry:		Date:	
Structure Review:		Date:	
Data Validation:		Date:	
Reported to Client:		Date:	

Micrographs:

	Micrograph Number	Type Diffraction or Morphology

INTERNAL SAMPLE CHAIN OF CUSTODY

5/28/2009 6:45:05 AM

Order ID: 270900145

Attn: Scott Carney
EMR, Inc.
11 East Superior Street
Suite 260
Duluth, MN 55802

Fax: (218) 625-2337 Phone: (218) 625-2332

Project: **5539 052109-01**
Samples collected 5/21/2009

Customer ID: EMRI78
Customer PO:
Received: 05/27/09 10:50 AM

EMSL Order: 270900145
EMSL Proj ID: BNSF 2009 OSHA
Cust COC ID

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900145	270900145-0002	P-KF052109		5/21/2009

Comments:

ANALYZED:	RM	**Date:**	6/2/09
Preliminary Data Sent to Special Projects:	RKm	**Date:**	6/2/09
Data Entry:		Date:	
Structure Review:		Date:	
Data Validation:		Date:	
Reported to Client:		Date:	

Micrographs:

	Micrograph Number	Type Diffraction or Morphology

INTERNAL SAMPLE CHAIN OF CUSTODY

5/28/2009 6:45:05 AM

Order ID: 270900145

Attn: Scott Carney
EMR, Inc.
11 East Superior Street
Suite 260
Duluth, MN 55802

Fax: (218) 625-2337 Phone: (218) 625-2332

Project: **5539 052109-01**
Samples collected 5/21/2009

Customer ID: EMRI78
Customer PO:
Received: 05/27/09 10:50 AM

EMSL Order: 270900145
EMSL Proj ID: BNSF 2009 OSHA
Cust COC ID

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900145	270900145-0003	P-JT052109		5/21/2009

Comments:

ANALYZED:	pmy	**Date:**	6/2/09
Preliminary Data Sent to Special Projects:	RKm	**Date:**	6/2/09
Data Entry:		Date:	
Structure Review:		Date:	
Data Validation:		Date:	
Reported to Client:		Date:	

Micrographs:

	Micrograph Number	Type Diffraction or Morphology

INTERNAL SAMPLE CHAIN OF CUSTODY

5/28/2009 6:45:05 AM

Order ID: 270900145

Attn: Scott Carney
EMR, Inc.
11 East Superior Street
Suite 260
Duluth, MN 55802

Fax: (218) 625-2337 Phone: (218) 625-2332

Project: **5539 052109-01**
Samples collected 5/21/2009

Customer ID: EMRI78
Customer PO:
Received: 05/27/09 10:50 AM

EMSL Order: 270900145
EMSL Proj ID: BNSF 2009 OSHA
Cust COC ID

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900145	270900145-0004	P-LP052109		5/21/2009

Comments:

ANALYZED:	srr	**Date:**	6/2/09
Preliminary Data Sent to Special Projects:	RKm	**Date:**	6/2/09
Data Entry:		Date:	
Structure Review:		Date:	
Data Validation:		Date:	
Reported to Client:		Date:	

Micrographs:

	Micrograph Number	Type Diffraction or Morphology

INTERNAL CHAIN OF CUSTODY

5/28/2009 6:44:50 AM

Order ID: 270900145

Attn: Scott Carney
EMR, Inc.
11 East Superior Street
Suite 260
Duluth, MN 55802

Fax: (218) 625-2337 Phone: (218) 625-2332

Project: **5539 052109-01**
Samples collected 5/21/2009

Customer ID EMRI78
Customer PO:
Received: 05/27/09 10:50 AM

EMSL Order: 270900145
EMSL Proj ID: BNSF 2009 OSHA
Cust COC ID

Test: TEM AHERA (Indirect) **Matrix** Air **TAT:** 24 Hour **Qty:** 6

Acct Sts: **Slsprsn:** epodell

Logged: rmahoney **Date:** 5/28/2009

Sample Condition: ☒ Acceptable ☐ Unacceptable

Comments

Inter- Lab Sample Transfer

Samples Relinquished: Date
Samples Received: Date
Package Mailed to Westmont: Date
Method of Delivery:

Includes: (Circle)
Benchsheets Sample Slides Sample filters
Micrographs GridBox Other

Final Package Received: Date:

Initial Prep (Initials/Lab): amy **Date:** 5/29/09
Filter Prep (Initials/Lab): amy **Date:** 6/1/09
Grid Prep (Initials/Lab): amy **Date:** 6/1/09

For Special Projects Use Only
QC Selection: Date:
Date Package Review: Date:
Date Package Mailed: Date:

Special Instructions

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900145	270900145-0001	P-RH052109	(RP) - RLP	5/21/2009
270900145	270900145-0002	P-KF052109		5/21/2009
270900145	270900145-0003	P-JT052109		5/21/2009
270900145	270900145-0004	P-LP052109		5/21/2009
270900145	270900145-0005	P-DW052109		5/21/2009
270900145	270900145-0006	P-DC052109		5/21/2009

2709-EMR-2/9(U) - RP

INTERNAL SAMPLE CHAIN OF CUSTODY

5/28/2009 6:45:05 AM

Order ID: 270900145

Attn: Scott Carney
EMR, Inc.
11 East Superior Street
Suite 260
Duluth, MN 55802

Fax: (218) 625-2337 Phone: (218) 625-2332

Project: **5539 052109-01**
Samples collected 5/21/2009

Customer ID: EMRI78
Customer PO:
Received: 05/27/09 10:50 AM

EMSL Order: 270900145
EMSL Proj ID: BNSF 2009 OSHA
Cust COC ID

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900145	270900145-0005	P-DW052109		5/21/2009

Comments:

ANALYZED:	RM	**Date:**	6/2/09
Preliminary Data Sent to Special Projects:	RKm	**Date:**	6/2/09
Data Entry:		Date:	
Structure Review:		Date:	
Data Validation:		Date:	
Reported to Client:		Date:	

Micrographs:

	Micrograph Number	Type Diffraction or Morphology

INTERNAL SAMPLE CHAIN OF CUSTODY

5/28/2009 6:45:05 AM

Order ID: 270900145

Attn: Scott Carney
EMR, Inc.
11 East Superior Street
Suite 260
Duluth, MN 55802

Fax: (218) 625-2337 Phone: (218) 625-2332

Project: **5539 052109-01**
Samples collected 5/21/2009

Customer ID: EMRI78
Customer PO:
Received: 05/27/09 10:50 AM

EMSL Order: 270900145
EMSL Proj ID: BNSF 2009 OSHA
Cust COC ID

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900145	270900145-0006	P-DC052109		5/21/2009

Comments:

ANALYZED:	MM	**Date:**	6/2/09
Preliminary Data Sent to Special Projects:	RKM	**Date:**	6/2/09
Data Entry:		Date:	
Structure Review:		Date:	
Data Validation:		Date:	
Reported to Client:		Date:	

Micrographs:

	Micrograph Number	Type Diffraction or Morphology

INTERNAL SAMPLE CHAIN OF CUSTODY

6/2/2009 9:08:46 AM

Order ID: 270900145

Attn: Scott Carney
EMR, Inc.
11 East Superior Street
Suite 260
Duluth, MN 55802

Fax: (218) 625-2337 Phone: (218) 625-2332

Project: **5539 052109-01**
Samples collected 5/21/2009

Customer ID: EMRI78
Customer PO:
Received: 05/27/09 10:50 AM

EMSL Order: 270900145
EMSL Proj ID: BNSF 2009 OSHA
Cust COC ID

Test: TEM AHERA **Matrix:** Air **TAT:** 24 Hour **Qty:** 1

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900145	270900145-0007	B-BK052109		5/28/2009 10:50:00 AM

Comments:

ANALYZED:	AM	**Date:**	6/2/09
Preliminary Data Sent to Special Projects:	KCM	**Date:**	6/2/09

Micrographs:

Test: TEM AHERA (Indirect) **Matrix:** Air **TAT:** 24 Hour **Qty:** 6

Asbestos Chain of Custody

EMSL Order Number *(Lab Use Only)*: 5539 052109-01

2709001145

EMSL ANALYTICAL, INC.
LABORATORY • PRODUCTS • TRAINING

EMSL ANALYTICAL, INC.
107 HADDON AVENUE
WESTMONT, NJ 08108
PHONE: (856) 858-4800
FAX: (856) 858-4960

Company: EMR	**EMSL-Bill to:** ☐ Same ☐ Different If Bill to is Different note instructions in Comments** *Third Party Billing requires written authorization from third party*
Street: 11 East Superior St Suite 260	
City: Duluth **State/Province:** MN	**Zip/Postal Code:** 55802 **Country:** USA
Report To (Name): Scott Carney	**Fax #:**
Telephone #: (218) 625-2331	**Email Address:**
Project Name/Number: BNSF 2009 OSHA / 5539.130	
Please Provide Results: ☐ Fax ■ Email	**Purchase Order:** **U.S. State Samples Taken:** MT

Turnaround Time (TAT) Options* – Please Check

☐ 3 Hours ☐ 6 Hours ■ 24 Hrs ☐ 48 Hrs ☐ 3 Days ☐ 4 Days ☐ 5 Days ☐ 10 Days

**For TEM Air 3 hours/6 hours, please call ahead to schedule.*There is a premium charge for 3 Hour TEM AHERA or EPA Level II TAT. You will be asked to sign an authorization form for this service. Analysis completed in accordance with EMSL's Terms and Conditions located in the Analytical Price Guide.*

PCM - Air
- ☐ NIOSH 7400
- ☐ w/ OSHA 8hr. TWA

PLM - Bulk (reporting limit)
- ☐ PLM EPA 600/R-93/116 (<1%)
- ☐ PLM EPA NOB (<1%)

Point Count
- ☐ 400 (<0.25%) ☐ 1000 (<0.1%)

Point Count w/Gravimetric
- ☐ 400 (<0.25%) ☐ 1000 (<0.1%)
- ☐ NYS 198.1 (friable in NY)
- ☐ NYS 198.6 NOB (non-friable-NY)
- ☐ NIOSH 9002 (<1%)

TEM - Air
- ■ AHERA 40 CFR, Part 763
- ☐ NIOSH 7402
- ☐ EPA Level II
- ☐ ISO 10312

TEM - Bulk
- ☐ TEM EPA NOB
- ☐ NYS NOB 198.4 (non-friable-NY)
- ☐ Chatfield SOP
- ☐ TEM Mass Analysis-EPA 600 sec. 2.5

TEM – Water: EPA 100.2
- Fibers >10µm ☐ Waste ☐ Drinking
- All Fiber Sizes ☐ Waste ☐ Drinking

TEM- Dust
- ☐ Microvac - ASTM D 5755
- ☐ Wipe - ASTM D6480
- ☐ Carpet Sonication (EPA 600/J-93/167)

Soil/Rock/Vermiculite
- ☐ PLM CARB 435 - A (0.25% sensitivity)
- ☐ PLM CARB 435 - B (0.1% sensitivity)
- ☐ TEM CARB 435 - B (0.1% sensitivity)
- ☐ TEM CARB 435 - C (0.01% sensitivity)
- ☐ EPA Protocol (Semi-Quantitative)
- ☐ EPA Protocol (Quantitative)

Other:
- ☐

☐ **Check For Positive Stop – Clearly Identify Homogenous Group**

Samplers Name: Michael McKay **Samplers Signature:** Michael McKay

Sample #	Sample Description	Volume/Area (Air) HA # (Bulk)	Date/Time Sampled
P-RH052109	Operator-Rex Hanna-Rail Machine	1713	5/21/09 07:08-17:09
P-KF052109	Operator-Keith Francis-Rail Machine	1710	5/21/09 07:09-17:09
P-JT052109	Operator-Jesus Tovar-Rail Machine	1699	5/21/09 07:10-17:06
P-LP052109	Operator-Leroy Paulson-Rail Machine	1430	5/21/09 07:12-17:08
P-DW052109	Operator-Duane Williams-Rail Machine	1418	5/21/09 07:13-17:04
P-DC052109	Operator-David Castro-Rail Machine	1493	5/21/09 07:16-17:13
B-BK052109	Field Blank - Opened		5/21/09

Client Sample # (s): - **Total # of Samples:** 7

Relinquished (Client): Michael McKay **Date:** 5/23/09 **Time:** 10:00

Received (Lab): R.K. Mahoney **Date:** 5/27/09 **Time:** 1050

Comments/Special Instructions:

Indirect Preparation Record

INDIRECT PREPARATION RECORD
REVISION 1
FEBRUARY 9, 2009

(TEM Air) TEM Dust PCM EFA 360 (mm2)
(Circle One)

		Indirect without ashing			Dilution Filtration						Indirect with Ashing			
Prepped by: RMY	Date: 6/1/09	Fraction of filter used	1st Resuspend Volume	Volume applied to filter	Volume of 1st Resuspend used	2nd Re-suspend Volume	Volume applied to filter	Volume of 2nd Re-suspend used	3rd Re-suspend Volume	Volume applied to filter	Fraction of filter ashed	Volume used to resuspend residue	Volume applied to 2nd filter	OK to Prep to Grid?
Order ID	Sample #		mL	mL	mL	mL	mL	mL	mL	mL		mL	mL	Y/N
270900145	P-RH052109	1	100	10										
				15										
				25										
				50										y
	PKF052109										1	100	10	
													15	y
													25	
													50	
	P-SF052109										1	100	10	
													15	
													25	y
													50	
	PLF052109										1	100	10	
													15	
													25	y
													50	

Indirect Preparation Record

INDIRECT PREPARATION RECORD
REVISION 1
FEBRUARY 9, 2009

TEM Air TEM Dust PCM EFA 360 (mm2)
(Circle One)

		Indirect without ashing			Dilution Filtration						Indirect with Ashing			
Prepped by: RMG	Date: 6/1/09	Fraction of filter used	1st Resuspend Volume	Volume applied to filter	Volume of 1st Resuspend used	2nd Re-suspend Volume	Volume applied to filter	Volume of 2nd Re-suspend used	3rd Re-suspend Volume	Volume applied to filter	Fraction of filter ashed	Volume used to resuspend residue	Volume applied to 2nd filter	OK to Prep to Grid?
Order ID	Sample #		mL	mL	mL	mL	mL	mL	mL	mL		mL	mL	Y/N
270900145	PDW052109										1	100	10	
													80	
					10	100	10							
							15							X
							25							
							50							
	PDC052109	1	100	10										
				15										
				25										y
				50										
	FB										-	100	100	y
	AB										1	100	100	y
	MB										-	100	100	y

RMG 6/2/09

EMSL ANALYTICAL, INC.
107 4TH STREET WEST
LIBBY, MONTANA 59923
TEL: 406-293-9066
FAX: 406-293-7016

RE: Sample preparation for 270900145 (BNSF-EMR)

The following samples (P-KF052109, P-JT052109, P-LP052109 & P-DW052109) were processed in the described method (M2):

M2 (loose material)

1. Loose materials in cassette consolidated with overloaded filter were prepared for ashing.
2. Samples placed in LFE asher until filters have been completely ashed.
3. Ashed sample (AS) re-suspended in 100mL particle water.
4. Fractions filtered (10, 15, 25 & 50mL) on 0.2µm filter backed by 5.0µm. Sample P-DW052109 was processed through second dilution.
5. Selected volume processed to grids.

The following samples (P-RH052109 & P-DC052109) were processed indirectly without ashing:

M3 (full filter used)

1. Sample re-suspended in 100mL particle water.
2. Fractions filtered (10, 15, 25 & 50mL) on 0.2µm filter backed by 5.0µm
3. Selected volume processed to grids.

Sample B-BK052109, was processed directly.

Please refer to SOP No.: EPA-LIBBY-08 for further information.

6/1/09

EMSL Analytical, Inc.
107 West 4th Street, Libby, MT 59923
Phone: (406) 293-9066 Fax: Email: mobileasbestoslab@emsl.com

Attn: **Scott Carney**
EMR, Inc.
11 East Superior Street
Suite 260
Duluth, MN 55802

Fax: (218) 625-2337 Phone: (218) 625-2332
Project: **5539 052109-01**
Samples collected 5/21/2009

Customer ID: EMRI78
Customer PO:
Received: 05/27/09 10:50 AM
EMSL Order: 270900145

EMSL Proj: BNSF 2009 OSHA
Analysis Date: 6/2/2009

Sampling Date: 5/21/2009

Asbestos Fiber Analysis by Transmission Electron Microscopy (TEM) Performed by AHERA -EPA 40 CFR Part 763 Appendix A to Subpart E (Modified for Indirect Prep)

Sample	*Location*	*Volume (Liters)*	*Area Analyzed (mm²)*	*Non Asb*	*Asbestos Type(s)*	*# Structures* ≥ 0.5μ < 5μ	*# Structures* ≥5μ	*Analytical Sensitivity (S/cc)*	*Total Asbestos Concentration (S/mm²)*	*Total Asbestos Concentration (S/cc)*
P-RH052109 *270900145-0001*		1713.00	0.0910		None Detected			0.0046	**<21.00**	**<0.0046**
P-KF052109 *270900145-0002*		1710.00	0.1300		None Detected			0.0110	**<48.00**	**<0.0110**
P-JT052109 *270900145-0003*		1699.00	0.1300		None Detected			0.0065	**<29.00**	**<0.0065**
P-LP052109 *270900145-0004*		1430.00	0.1300		None Detected			0.0077	**<29.00**	**<0.0077**
P-DW052109 *270900145-0005*		1418.00	0.1300		None Detected			0.1300	**<480.00**	**<0.1300**
P-DC052109 *270900145-0006*		1493.00	0.1300		None Detected			0.0074	**<29.00**	**<0.0074**

Analyst(s)

Roy Pescador (6)

R. K. Mahoney

R. K. Mahoney, Laboratory Manager
or other approved signatory

THIS IS THE LAST PAGE OF THE REPORT.

EMSL Analytical, Inc.
107 West 4th Street, Libby, MT 59923
Phone: (406) 293-9666 Fax: Email: mobileasbestoslab@emsl.com

Attn: **Scott Carney**
EMR, Inc.
11 East Superior Street
Suite 260
Duluth, MN 55802

Fax: (218) 625-2337 Phone: (218) 625-2332

Project: **5539 052109-01**
Samples collected 5/21/2009

Customer ID: EMRI78
Customer PO:
Received: 05/27/09 10:50 AM
EMSL Order: 270900145

EMSL Proj: BNSF 2009 OSHA
Analysis Date: 6/2/2009

Sampling Date: 5/21/2009

Asbestos Fiber Analysis by Transmission Electron Microscopy (TEM) Performed by EPA 40 CFR Part 763 Appendix A to Subpart E

Sample	Location	Volume (Liters)	Area Analyzed (mm^2)	Non Asb	Asbestos Type(s)	# Structures ≥ 0.5μ < 5μ	# Structures ≥5μ	Analytical Sensitivity (S/cc)	Asbestos Concentration (S/mm^2)	Asbestos Concentration (S/cc)
B-BK052109			0.1300		None Detected				<7.70	
270900145-0007										
Field Blank										

Analyst(s)

Ron Mahoney (1)

R. K. Mahoney, Laboratory Manager
or other approved signatory

Disclaimers: The laboratory is not responsible for data reported in structures/cc, which is dependent on volume collected by non-laboratory personnel. This lab is only responsible for data reported in structures/mm^2. This report may not be reproduced, except in full, without written approval by EMSL. This report must not be used to claim product endorsement by NVLAP or any agency of the U.S. Government. This report relates only to the samples reported above. Quality control data (including 95% confidence limits and laboratory and analysts' accuracy and precision) is available upon request. As per 40 CFR 763, the initial screening test may not be applied to samples with collected volumes of <1200 liters. The test results contained within this report meet the requirements of NELAC unless otherwise noted. Samples received in good condition unless otherwise noted.

Accredited for NVLAP PLM/TEM. NVLAP Libby code: 200745-0

BNSF 2009 OSHA
TEM Asbestos Structure Count

Laboratory name:	EMSL27
Instrument	JEOL 100 CX II (27-2)
Voltage (KV)	100
Magnification	19,000 X
Grid opening area (mm2)	0.013
Scale: 1L =	1
Scale: 1D =	1
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	360
Category (Field, Rep., Dup., Blank)	Field
Primary filter pore size (um)	0.8

EPA Sample Number:	P-2H 052109
Sample Type (A=Air, D=Dust, DF = Dustfall):	A
Air volume (L), dust area (cm2), or dustfall container area (cm2)	1713
Date received by lab	5/27/2009
Lab Job Number:	270900145
Lab Sample Number:	270900145-0001
Number of grids prepared	
Prepared by	
Preparation date	
EPA COC Number:	5539 052109-01
Secondary filter pore size (um)	0.2

Analyzed by	
Analysis date	
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
If sample type = air, is there loose material or debris in the cowl? (Yes, No)	NO
Counting rules (ISO, AHERA, ASTM)	AHERA
Grid storage location	
Archive filter(s) storage location	Westmont
QA Type (Not QA, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interlab)	Not QA

F-Factor Calculation (Indirect Preps Only):

Enter data in appropriate cells provided to the right----->

Recording Rules:

Minimum Aspect Ratio (circle one):

none ≥ 3:1 (≥ 5:1)

Minimum Length (um): 0.5

Minimum Width (um): None

Stopping Rules:

Target Sensitivity: 0.005

Max # of GOs: 4

Target # of Structures:

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		Identification	Mineral Class (see below)				Sketch/ Comments	1 = yes, blank = no			Fract. GO Chrys.
			Primary	Total	Length	Width		LA	OA	C	NAM		Sketch	Photo	EDS	
	OVERLOADED															

F-factor Calculation:

Indirect Prep Inputs

- Fraction of primary filter used for indirect prep or ashing *[For dust and dustfall, enter 1.0]*
- First resuspension volume or rinsate volume (mL)
- Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

- Second resuspension volume (mL)
- Volume applied to secondary filter (mL) or used for serial dilution
- Third resuspension volume (mL)
- Volume applied to secondary filter (mL)

Input for Ashing of Secondary Filter

- Fraction of secondary filter used for ashing

LA = Libby-type amphibole

OA = Other (non-Libby type) amphibole

C = Chrysotile

NAM = Non-asbestos material

Grid opening traverse direction (circle one):

H Horizontal

V Vertical

Are prepped grids acceptable for analysis? (circle one) Yes No

If No, explain:

BNSF 2009 OSHA
TEM Asbestos Structure Count

Laboratory name:	EMSL27
Instrument	JEOL 100 CX II (27-2)
Voltage (KV)	100
Magnification	19,000 X
Grid opening area (mm2)	0.013
Scale: 1L =	1
Scale: 1D =	1
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	360
Category (Field, Rep., Dup., Blank)	Field
Primary filter pore size (um)	0.8

EPA Sample Number:	P-RH 052109
Sample Type (A=Air, D=Dust, DF = Dustfall):	A
Air volume (L), dust area (cm2), or dustfall container area (cm2)	1713
Date received by lab	5/27/2009
Lab Job Number:	270900145
Lab Sample Number:	270900145-0001
Number of grids prepared	3
Prepared by	R. Pescador
Preparation date	6/1/2009
EPA COC Number:	5539 052109-01
Secondary filter pore size (um)	0.2

Analyzed by	R. Pescador
Analysis date	6/2/2009
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	I
If sample type = air, is there loose material or debris in the cowl? (Yes, No)	No
Counting rules (ISO, AHERA, ASTM)	AHERA
Grid storage location	2709-EMR-49, Q
Archive filter(s) storage location	Westmont
QA Type (Not QA, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interlab)	Not QA

F-Factor Calculation (Indirect Preps Only):
Enter data in appropriate cells provided to the right----->

Recording Rules:

Minimum Aspect Ratio (circle one): none / ≥ 3:1 / (≥ 5:1)	
Minimum Length (um):	0.5
Minimum Width (um):	None

Stopping Rules:

Target Sensitivity:	0.005
Max # of GOs:	7
Target # of Structures:	

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		Identification	Mineral Class (see below)				Sketch/ Comments	1 = yes, blank = no			Fract. GO Chrys.
			Primary	Total	Length	Width		LA	OA	C	NAM		Sketch	Photo	EDS	
1	G6	ND														
	G4	ND														
	G2	ND														
2	G3	ND														
	G5	ND														
	D7	ND														
	C10	ND														

LA = Libby-type amphibole OA = Other (non-Libby type) amphibole C = Chrysotile NAM = Non-asbestos material

F-factor Calculation:

Indirect Prep Inputs

1.0	Fraction of primary filter used for indirect prep or ashing *[For dust and dustfall, enter 1.0]*
100	First resuspension volume or rinsate volume (mL)
50	Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

	Second resuspension volume (mL)
	Volume applied to secondary filter (mL) or used for serial dilution
	Third resuspension volume (mL)
	Volume applied to secondary filter (mL)

Input for Ashing of Secondary Filter

	Fraction of secondary filter used for ashing

Grid opening traverse direction (circle one):
H Horizontal
(V) Vertical

Are prepped grids acceptable for analysis? (circle one) (Yes) No
If No, explain:

BNSF 2009 OSHA
TEM Asbestos Structure Count

Laboratory name:	EMSL27
Instrument	JEOL 100 CX II (27-2)
Voltage (KV)	100
Magnification	19,000 X
Grid opening area (mm2)	0.013
Scale: 1L =	1
Scale: 1D =	1
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	360
Category (Field, Rep., Dup., Blank)	Field
Primary filter pore size (um)	0.8

EPA Sample Number:	P-KF 052109
Sample Type (A=Air, D=Dust, DF = Dustfall):	A
Air volume (L), dust area (cm2), or dustfall container area (cm2)	1710
Date received by lab	5/27/2009
Lab Job Number:	270900145
Lab Sample Number:	270900145-0002
Number of grids prepared	
Prepared by	
Preparation date	
EPA COC Number:	5539 052109-01
Secondary filter pore size (um)	0.2

Analyzed by	
Analysis date	
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
If sample type = air, is there loose material or debris in the cowl? (Yes, No)	YES
Counting rules (ISO, AHERA, ASTM)	AHERA
Grid storage location	
Archive filter(s) storage location	Westmont
QA Type (Not QA, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interlab)	Not QA

F-Factor Calculation (Indirect Preps Only):
Enter data in appropriate cells provided to the right----->

Recording Rules:

Minimum Aspect Ratio (circle one):	none ≥ 3:1 (≥ 5:1)
Minimum Length (um):	0.5
Minimum Width (um):	None

Stopping Rules:

Target Sensitivity:	0.005
Max # of GOs:	4
Target # of Structures:	

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		Identification	Mineral Class (see below)				Sketch/ Comments	1 = yes, blank = no			Fract. GO Chrys.
			Primary	Total	Length	Width		LA	OA	C	NAM		Sketch	Photo	EDS	
		OVERLOADED														
		LOOSE MATERIAL														

F-factor Calculation:

Indirect Prep Inputs

	Fraction of primary filter used for indirect prep or ashing *[For dust and dustfall, enter 1.0]*
	First resuspension volume or rinsate volume (mL)
	Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

	Second resuspension volume (mL)
	Volume applied to secondary filter (mL) or used for serial dilution
	Third resuspension volume (mL)
	Volume applied to secondary filter (mL)

Input for Ashing of Secondary Filter

	Fraction of secondary filter used for ashing

LA = Libby-type amphibole

OA = Other (non-Libby type) amphibole

C = Chrysotile

NAM = Non-asbestos material

Grid opening traverse direction (circle one):
H Horizontal
V Vertical

Are prepped grids acceptable for analysis? (circle one) Yes No
If No, explain:

BNSF 2009 OSHA
TEM Asbestos Structure Count

Laboratory name:	EMSL27
Instrument	JEOL 100 CX II (27-2)
Voltage (KV)	100
Magnification	19,000 X
Grid opening area (mm2)	0.013
Scale: 1L =	1
Scale: 1D =	1
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	360
Category (Field, Rep., Dup., Blank)	Field
Primary filter pore size (um)	0.8

EPA Sample Number:	P-KF 052109
Sample Type (A=Air, D=Dust, DF = Dustfall):	A
Air volume (L), dust area (cm2), or dustfall container area (cm2)	1710
Date received by lab	5/27/2009
Lab Job Number:	270900145
Lab Sample Number:	270900145-0002
Number of grids prepared	3
Prepared by	R. Pescador
Preparation date	6/1/2009
EPA COC Number:	5539 052109-01
Secondary filter pore size (um)	0.2

Analyzed by	R. Pescador
Analysis date	6/ 2 /2009
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	IA
If sample type = air, is there loose material or debris in the cowl? (Yes, No)	YES
Counting rules (ISO, AHERA, ASTM)	AHERA
Grid storage location	2709-EMR-49, Q
Archive filter(s) storage location	Westmont
QA Type (Not QA, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interlab)	Not QA

F-Factor Calculation (Indirect Preps Only):

Enter data in appropriate cells provided to the right----->

Recording Rules:

Minimum Aspect Ratio (circle one): none ≥ 3:1 (≥ 5:1)

Minimum Length (um): 0.5

Minimum Width (um): None

Stopping Rules:

Target Sensitivity: 0.005

Max # of GOs: 10

Target # of Structures:

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		Identification	Mineral Class (see below)				Sketch/ Comments	1 = yes, blank = no			Fract. GO Chrys.
			Primary	Total	Length	Width		LA	OA	C	NAM		Sketch	Photo	EDS	
1	C9	ND														
	C7	ND														
	C5	ND														
	C3	ND														
	C1	ND														
2	D9	ND														
	D7	ND														
	D5	ND														
	D3	ND														
	D1	ND														

F-factor Calculation:

Indirect Prep Inputs

1.0	Fraction of primary filter used for indirect prep or ashing *[For dust and dustfall, enter 1.0]*
100	First resuspension volume or rinsate volume (mL)
15	Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

	Second resuspension volume (mL)
	Volume applied to secondary filter (mL) or used for serial dilution
	Third resuspension volume (mL)
	Volume applied to secondary filter (mL)

Input for Ashing of Secondary Filter

	Fraction of secondary filter used for ashing

LA = Libby-type amphibole

OA = Other (non-Libby type) amphibole

C = Chrysotile

NAM = Non-asbestos material

Grid opening traverse direction (circle one):

H Horizontal

(V) Vertical

Are prepped grids acceptable for analysis? (circle one) (Yes) No

If No, explain:

BNSF 2009 OSHA
TEM Asbestos Structure Count

Laboratory name:	EMSL27
Instrument	JEOL 100 CX II (27-2)
Voltage (KV)	100
Magnification	19,000 X
Grid opening area (mm2)	0,013
Scale: 1L =	1
Scale: 1D =	1
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	360
Category (Field, Rep., Dup., Blank)	Field
Primary filter pore size (um)	0.8

EPA Sample Number:	P-JT 052109
Sample Type (A=Air, D=Dust, DF = Dustfall):	A
Air volume (L), dust area (cm2), or dustfall container area (cm2)	1699
Date received by lab	5/27/2009
Lab Job Number:	270900145
Lab Sample Number:	270900145-0003
Number of grids prepared	
Prepared by	
Preparation date	
EPA COC Number:	5539 052109-01
Secondary filter pore size (um)	0.2

Analyzed by	
Analysis date	
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
If sample type = air, is there loose material or debris in the cowl? (Yes, No)	YES
Counting rules (ISO, AHERA, ASTM)	AHERA
Grid storage location	
Archive filter(s) storage location	Westmont
QA Type (Not QA, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interlab)	Not QA

F-Factor Calculation (Indirect Preps Only):

Enter data in appropriate cells provided to the right----->

Recording Rules:

Minimum Aspect Ratio (circle one):

none ≥ 3:1 (≥ 5:1)

Minimum Length (um): 0.5

Minimum Width (um): None

Stopping Rules:

Target Sensitivity: 0.005

Max # of GOs: 4

Target # of Structures:

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		Identification	Mineral Class (see below)				Sketch/ Comments	1 = yes, blank = no			Fract. GO Chrys.
			Primary	Total	Length	Width		LA	OA	C	NAM		Sketch	Photo	EDS	
		OVERLOADED														
		LOOSE MATERIAL														

F-factor Calculation:

Indirect Prep Inputs

- Fraction of primary filter used for indirect prep or ashing *[For dust and dustfall, enter 1.0]*
- First resuspension volume or rinsate volume (mL)
- Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

- Second resuspension volume (mL)
- Volume applied to secondary filter (mL) or used for serial dilution
- Third resuspension volume (mL)
- Volume applied to secondary filter (mL)

Input for Ashing of Secondary Filter

- Fraction of secondary filter used for ashing

LA = Libby-type amphibole

OA = Other (non-Libby type) amphibole

C = Chrysotile

NAM = Non-asbestos material

Grid opening traverse direction (circle one):

H Horizontal

V Vertical

Are prepped grids acceptable for analysis? (circle one) Yes No

If No, explain:

BNSF 2009 OSHA
TEM Asbestos Structure Count

Laboratory name:	EMSL27
Instrument	JEOL 100 CX II (27-2)
Voltage (KV)	100
Magnification	19,000 X
Grid opening area (mm2)	0.013
Scale: 1L =	1
Scale: 1D =	1
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	360
Category (Field, Rep., Dup., Blank)	Field
Primary filter pore size (um)	0.8

EPA Sample Number:	PJT052109
Sample Type (A=Air, D=Dust, DF = Dustfall):	A
Air volume (L), dust area (cm2), or dustfall container area (cm2)	1699
Date received by lab	5/27/2009
Lab Job Number:	270900145
Lab Sample Number:	270900145-0003
Number of grids prepared	3
Prepared by	R. Pescador
Preparation date	6/1/2009
EPA COC Number:	5539 052109-01
Secondary filter pore size (um)	0.2

Analyzed by	R. Pescador
Analysis date	6/2/2009
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	IA
If sample type = air, is there loose material or debris in the cowl? (Yes, No)	YES
Counting rules (ISO, AHERA, ASTM)	AHERA
Grid storage location	2709-EMR-49, Q
Archive filter(s) storage location	Westmont
QA Type (Not QA, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interlab)	Not QA

F-Factor Calculation (Indirect Preps Only):

Enter data in appropriate cells provided to the right----->

Recording Rules:

Minimum Aspect Ratio (circle one):	none / ≥ 3:1 / (≥ 5:1)
Minimum Length (um):	0.5
Minimum Width (um):	None

Stopping Rules:

Target Sensitivity:	0.005
Max # of GOs:	10
Target # of Structures:	

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		Identification	Mineral Class (see below)				Sketch/ Comments	1 = yes, blank = no			Fract. GO Chrys.
			Primary	Total	Length	Width		LA	OA	C	NAM		Sketch	Photo	EDS	
1	G2	ND														
	G4	ND														
	G6	ND														
	G8	ND														
	G10	ND														
2	D9	ND														
	D7	ND														
	D5	ND														
	D3	ND														
	D1	ND														

F-factor Calculation:

Indirect Prep Inputs

1.0	Fraction of primary filter used for indirect prep or ashing *[For dust and dustfall, enter 1.0]*
100	First resuspension volume or rinsate volume (mL)
25	Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

	Second resuspension volume (mL)
	Volume applied to secondary filter (mL) or used for serial dilution
	Third resuspension volume (mL)
	Volume applied to secondary filter (mL)

Input for Ashing of Secondary Filter

	Fraction of secondary filter used for ashing

LA = Libby-type amphibole

OA = Other (non-Libby type) amphibole

C = Chrysotile

NAM = Non-asbestos material

Grid opening traverse direction (circle one):

H Horizontal

(V) Vertical

Are prepped grids acceptable for analysis? (circle one) (Yes) No

If No, explain:

BNSF 2009 OSHA
TEM Asbestos Structure Count

Laboratory name:	EMSL27
Instrument	JEOL 100 CX II (27-2)
Voltage (KV)	100
Magnification	19,000 X
Grid opening area (mm2)	0.013
Scale: 1L =	1
Scale: 1D =	1
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	360
Category (Field, Rep., Dup., Blank)	Field
Primary filter pore size (um)	0.8

EPA Sample Number:	P-LP 052109
Sample Type (A=Air, D=Dust, DF = Dustfall):	A
Air volume (L), dust area (cm2), or dustfall container area (cm2)	1430
Date received by lab	5/27/2009
Lab Job Number:	270900145
Lab Sample Number:	270900145-0004
Number of grids prepared	
Prepared by	
Preparation date	
EPA COC Number:	5539 052109-01
Secondary filter pore size (um)	0.2

Analyzed by	
Analysis date	
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
If sample type = air, is there loose material or debris in the cowl? (Yes, No)	YES
Counting rules (ISO, AHERA, ASTM)	AHERA
Grid storage location	
Archive filter(s) storage location	Westmont
QA Type (Not QA, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interlab)	Not QA

F-Factor Calculation (Indirect Preps Only):
Enter data in appropriate cells provided to the right----->

Recording Rules:

Minimum Aspect Ratio (circle one):	none ≥ 3:1 (≥ 5:1)
Minimum Length (um):	0.5
Minimum Width (um):	None

Stopping Rules:

Target Sensitivity:	0.005
Max # of GOs:	5
Target # of Structures:	

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		Identification	Mineral Class (see below)				Sketch/ Comments	1 = yes, blank = no			Fract. GO Chrys.
			Primary	Total	Length	Width		LA	OA	C	NAM		Sketch	Photo	EDS	
		OVERLOADED														
		LOOSE MATERIAL														

F-factor Calculation:

Indirect Prep Inputs

	Fraction of primary filter used for indirect prep or ashing *[For dust and dustfall, enter 1.0]*
	First resuspension volume or rinsate volume (mL)
	Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

	Second resuspension volume (mL)
	Volume applied to secondary filter (mL) or used for serial dilution
	Third resuspension volume (mL)
	Volume applied to secondary filter (mL)

Input for Ashing of Secondary Filter

	Fraction of secondary filter used for ashing

LA = Libby-type amphibole

OA = Other (non-Libby type) amphibole

C = Chrysotile

NAM = Non-asbestos material

Grid opening traverse direction (circle one):
H Horizontal
V Vertical

Are prepped grids acceptable for analysis? (circle one) Yes No
If No, explain:

BNSF 2009 OSHA
TEM Asbestos Structure Count

Laboratory name:	EMSL27
Instrument	JEOL 100 CX II (27-2)
Voltage (KV)	100
Magnification	19,000 X
Grid opening area (mm2)	0.013
Scale: 1L =	1
Scale: 1D =	1
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	360
Category (Field, Rep., Dup., Blank)	Field
Primary filter pore size (um)	0.8

EPA Sample Number:	P-LP 052109
Sample Type (A=Air, D=Dust, DF = Dustfall):	A
Air volume (L), dust area (cm2), or dustfall container area (cm2)	1430
Date received by lab	5/27/2009
Lab Job Number:	270900145
Lab Sample Number:	270900145-0004
Number of grids prepared	3
Prepared by	R. Pescador
Preparation date	6/1/2009
EPA COC Number:	5539 052109-01
Secondary filter pore size (um)	0.2

Analyzed by	R. Pescador
Analysis date	6/2/2009
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	IA
If sample type = air, is there loose material or debris in the cowl? (Yes, No)	YES
Counting rules (ISO, AHERA, ASTM)	AHERA
Grid storage location	2709-EMR-49, R (2709-EMR-MC-50, H)
Archive filter(s) storage location	Westmont
QA Type (Not QA, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interlab)	Not QA

F-Factor Calculation (Indirect Preps Only):

Enter data in appropriate cells provided to the right----->

Recording Rules:

Minimum Aspect Ratio (circle one):	none / ≥ 3:1 / (≥ 5:1)
Minimum Length (um):	0.5
Minimum Width (um):	None

Stopping Rules:

Target Sensitivity:	0.005
Max # of GOs:	10
Target # of Structures:	

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		Identification	Mineral Class (see below)				Sketch/ Comments	1 = yes, blank = no			Fract. GO Chrys.
			Primary	Total	Length	Width		LA	OA	C	NAM		Sketch	Photo	EDS	
2	F9	ND														
	F7	ND														
	F5	ND														
	F3	ND														
	F1	ND														
3	B5	ND														
	B3	ND														
	B1	ND														
	F4	ND														
	F2	ND														

F-factor Calculation:

Indirect Prep Inputs

1.0	Fraction of primary filter used for indirect prep or ashing *[For dust and dustfall, enter 1.0]*
100	First resuspension volume or rinsate volume (mL)
25	Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

	Second resuspension volume (mL)
	Volume applied to secondary filter (mL) or used for serial dilution
	Third resuspension volume (mL)
	Volume applied to secondary filter (mL)

Input for Ashing of Secondary Filter

	Fraction of secondary filter used for ashing

LA = Libby-type amphibole

OA = Other (non-Libby type) amphibole

C = Chrysotile

NAM = Non-asbestos material

Grid opening traverse direction (circle one):
H Horizontal
(V) Vertical

Are prepped grids acceptable for analysis? (circle one) (Yes) No

If No, explain:

BNSF 2009 OSHA
TEM Asbestos Structure Count

Laboratory name:	EMSL27
Instrument	JEOL 100 CX II (27-2)
Voltage (KV)	100
Magnification	19,000 X
Grid opening area (mm2)	0.013
Scale: 1L =	1
Scale: 1D =	1
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	360
Category (Field, Rep., Dup., Blank)	Field
Primary filter pore size (um)	0.8

EPA Sample Number:	P-DW 052109
Sample Type (A=Air, D=Dust, DF = Dustfall):	A
Air volume (L), dust area (cm2), or dustfall container area (cm2)	1418
Date received by lab	5/27/2009
Lab Job Number:	270900145
Lab Sample Number:	270900145-0005
Number of grids prepared	
Prepared by	
Preparation date	
EPA COC Number:	5539 052109-01
Secondary filter pore size (um)	0.2

Analyzed by	
Analysis date	
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
If sample type = air, is there loose material or debris in the cowl? (Yes, No)	Yes
Counting rules (ISO, AHERA, ASTM)	AHERA
Grid storage location	
Archive filter(s) storage location	Westmont
QA Type (Not QA, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interlab)	Not QA

F-Factor Calculation (Indirect Preps Only):

Enter data in appropriate cells provided to the right----->

Recording Rules:

Minimum Aspect Ratio (circle one): none ≥ 3:1 (≥ 5:1)

Minimum Length (um): 0.5

Minimum Width (um): None

Stopping Rules:

Target Sensitivity: 0.005

Max # of GOs: 5

Target # of Structures:

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		Identification	Mineral Class (see below)				Sketch/ Comments	1 = yes, blank = no			Fract. GO Chrys.
			Primary	Total	Length	Width		LA	OA	C	NAM		Sketch	Photo	EDS	
		OVERLOADED														
		LOOSE MATERIAL														

LA = Libby-type amphibole OA = Other (non-Libby type) amphibole C = Chrysotile NAM = Non-asbestos material

F-factor Calculation:

Indirect Prep Inputs

- Fraction of primary filter used for indirect prep or ashing *[For dust and dustfall, enter 1.0]*
- First resuspension volume or rinsate volume (mL)
- Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

- Second resuspension volume (mL)
- Volume applied to secondary filter (mL) or used for serial dilution
- Third resuspension volume (mL)
- Volume applied to secondary filter (mL)

Input for Ashing of Secondary Filter

- Fraction of secondary filter used for ashing

Grid opening traverse direction (circle one):

H Horizontal

V Vertical

Are prepped grids acceptable for analysis? (circle one) Yes No

If No, explain:

BNSF 2009 OSHA
TEM Asbestos Structure Count

Laboratory name:	EMSL27
Instrument	JEOL 100 CX II (27-2)
Voltage (KV)	100
Magnification	19,000 X
Grid opening area (mm2)	0.013
Scale: 1L =	1
Scale: 1D =	1
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	360
Category (Field, Rep., Dup., Blank)	Field
Primary filter pore size (um)	0.8

EPA Sample Number:	P-DW 052109
Sample Type (A=Air, D=Dust, DF = Dustfall):	A
Air volume (L), dust area (cm2), or dustfall container area (cm2)	1418
Date received by lab	5/27/2009
Lab Job Number:	270900145
Lab Sample Number:	270900145-0005
Number of grids prepared	3
Prepared by	R. Pescador
Preparation date	6/1/2009
EPA COC Number:	5539 052109-01
Secondary filter pore size (um)	0.2

Analyzed by	R. Pescador
Analysis date	6/2/2009
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	IA
If sample type = air, is there loose material or debris in the cowl? (Yes, No)	YES
Counting rules (ISO, AHERA, ASTM)	AHERA
Grid storage location	2709-EMR-49, R
Archive filter(s) storage location	Westmont
QA Type (Not QA, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interlab)	Not QA

2709-EMR-ARC-50, H

Recording Rules:

Minimum Aspect Ratio (circle one): none ≥ 3:1 (≥ 5:1)

Minimum Length (um): 0.5

Minimum Width (um): None

Stopping Rules:

Target Sensitivity: 0.005

Max # of GOs: 10

Target # of Structures:

F-Factor Calculation (Indirect Preps Only):

Enter data in appropriate cells provided to the right----->

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		Identification	Mineral Class (see below)				Sketch/ Comments	1 = yes, blank = no			Fract. GO Chrys.
			Primary	Total	Length	Width		LA	OA	C	NAM		Sketch	Photo	EDS	
2	H1	ND														
	H3	ND														
	H5	ND														
	H7	ND														
	H9	ND														
3	G9	ND														
	G7	ND														
	G5	ND														
	G3	ND														
	G1	ND														

F-factor Calculation:

Indirect Prep Inputs

1.0	Fraction of primary filter used for indirect prep or ashing *[For dust and dustfall, enter 1.0]*
100	First resuspension volume or rinsate volume (mL)
10	Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

100	Second resuspension volume (mL)
15	Volume applied to secondary filter (mL) or used for serial dilution
	Third resuspension volume (mL)
	Volume applied to secondary filter (mL)

Input for Ashing of Secondary Filter

	Fraction of secondary filter used for ashing

LA = Libby-type amphibole

OA = Other (non-Libby type) amphibole

C = Chrysotile

NAM = Non-asbestos material

Grid opening traverse direction (circle one):
H Horizontal
(V) Vertical

Are prepped grids acceptable for analysis? (circle one) (Yes) No

If No, explain:

BNSF 2009 OSHA
TEM Asbestos Structure Count

Laboratory name:	EMSL27
Instrument	JEOL 100 CX II (27-2)
Voltage (KV)	100
Magnification	19,000 X
Grid opening area (mm2)	0.013
Scale: 1L =	1
Scale: 1D =	1
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	360
Category (Field, Rep., Dup., Blank)	Field
Primary filter pore size (um)	0.8

EPA Sample Number:	P-DC 052109
Sample Type (A=Air, D=Dust, DF = Dustfall):	A
Air volume (L), dust area (cm2), or dustfall container area (cm2)	1493
Date received by lab	5/27/2009
Lab Job Number:	270900145
Lab Sample Number:	270900145-0006
Number of grids prepared	
Prepared by	
Preparation date	
EPA COC Number:	5539 052109-01
Secondary filter pore size (um)	0.2

Analyzed by	
Analysis date	
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
If sample type = air, is there loose material or debris in the cowl? (Yes, No)	No
Counting rules (ISO, AHERA, ASTM)	AHERA
Grid storage location	
Archive filter(s) storage location	Westmont
QA Type (Not QA, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interlab)	Not QA

F-Factor Calculation (Indirect Preps Only):

Enter data in appropriate cells provided to the right----->

Recording Rules:

Minimum Aspect Ratio (circle one):

none ≥ 3:1 (≥ 5:1)

Minimum Length (um): 0.5

Minimum Width (um): None

Stopping Rules:

Target Sensitivity: 0.005

Max # of GOs: 4

Target # of Structures:

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		Identification	Mineral Class (see below)				Sketch/ Comments	1 = yes, blank = no			Fract. GO Chrys.
			Primary	Total	Length	Width		LA	OA	C	NAM		Sketch	Photo	EDS	
		OVERLOADED														

F-factor Calculation:

Indirect Prep Inputs

- Fraction of primary filter used for indirect prep or ashing *[For dust and dustfall, enter 1.0]*
- First resuspension volume or rinsate volume (mL)
- Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

- Second resuspension volume (mL)
- Volume applied to secondary filter (mL) or used for serial dilution
- Third resuspension volume (mL)
- Volume applied to secondary filter (mL)

Input for Ashing of Secondary Filter

- Fraction of secondary filter used for ashing

LA = Libby-type amphibole

OA = Other (non-Libby type) amphibole

C = Chrysotile

NAM = Non-asbestos material

Grid opening traverse direction (circle one):

H Horizontal

V Vertical

Are prepped grids acceptable for analysis? (circle one) Yes No

If No, explain:

BNSF 2009 OSHA
TEM Asbestos Structure Count

Laboratory name:	EMSL27
Instrument	JEOL 100 CX II (27-2)
Voltage (KV)	100
Magnification	19,000 X
Grid opening area (mm2)	0.013
Scale: 1L =	1
Scale: 1D =	1
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	360
Category (Field, Rep., Dup., Blank)	Field
Primary filter pore size (um)	0.8

EPA Sample Number:	P-DC 052109
Sample Type (A=Air, D=Dust, DF = Dustfall):	A
Air volume (L), dust area (cm2), or dustfall container area (cm2)	1493
Date received by lab	5/27/2009
Lab Job Number:	270900145
Lab Sample Number:	270900145-0006
Number of grids prepared	3
Prepared by	R. Pescador
Preparation date	6/1/2009
EPA COC Number:	5539 052109-01
Secondary filter pore size (um)	0.2

Analyzed by	R. Pescador
Analysis date	6/2/2009
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	I
If sample type = air, is there loose material or debris in the cowl? (Yes, No)	NO
Counting rules (ISO, AHERA, ASTM)	AHERA
Grid storage location	2709-EMR-49, R (2709-EMR-ARC-50, H)
Archive filter(s) storage location	Westmont
QA Type (Not QA, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interlab)	Not QA

F-Factor Calculation (Indirect Preps Only):

Enter data in appropriate cells provided to the right----->

Recording Rules:

Minimum Aspect Ratio (circle one): none ≥ 3:1 (≥ 5:1)

Minimum Length (um): 0.5

Minimum Width (um): None

Stopping Rules:

Target Sensitivity: 0.005

Max # of GOs:

Target # of Structures:

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		Identification	Mineral Class (see below)				Sketch/ Comments	1 = yes, blank = no			Fract. GO Chrys.
			Primary	Total	Length	Width		LA	OA	C	NAM		Sketch	Photo	EDS	
1	I2	ND														
	I4	ND														
	I6	ND														
	I8	ND														
3	H2	ND														
	H4	ND														
	H6	ND														
	H8	ND														
	F6	ND														
	F8	ND														

F-factor Calculation:

Indirect Prep Inputs

1.0	Fraction of primary filter used for indirect prep or ashing *[For dust and dustfall, enter 1.0]*
100	First resuspension volume or rinsate volume (mL)
25 ~~2.5~~	Volume applied to secondary filter (mL) or used for serial dilution

MV 6/4/09 PRV 6/2/09

Inputs for Serial Dilutions

	Second resuspension volume (mL)
	Volume applied to secondary filter (mL) or used for serial dilution
	Third resuspension volume (mL)
	Volume applied to secondary filter (mL)

Input for Ashing of Secondary Filter

	Fraction of secondary filter used for ashing

LA = Libby-type amphibole

OA = Other (non-Libby type) amphibole

C = Chrysotile

NAM = Non-asbestos material

Grid opening traverse direction (circle one):

H Horizontal

(V) Vertical

Are prepped grids acceptable for analysis? (circle one) (Yes) No

If No, explain:

BNSF 2009 OSHA
TEM Asbestos Structure Count

Laboratory name:	EMSL27
Instrument	JEOL 100 CX II (27-2)
Voltage (KV)	100
Magnification	19,000 X
Grid opening area (mm2)	0.013
Scale: 1L =	1
Scale: 1D =	1
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	360
Category (Field, Rep., Dup., Blank)	Blank
Primary filter pore size (um)	0.8

EPA Sample Number:	B-BK-052109
Sample Type (A=Air, D=Dust, DF = Dustfall):	A
Air volume (L), dust area (cm2), or dustfall container area (cm2)	0
Date received by lab	5/27/2009
Lab Job Number:	270900145
Lab Sample Number:	270900145-0007
Number of grids prepared	3
Prepared by	R. Pescador
Preparation date	6/1/2009
EPA COC Number:	5539 052109-01
Secondary filter pore size (um)	0.2

Analyzed by	R. Pescador
Analysis date	6/2/2009
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
If sample type = air, is there loose material or debris in the cowl? (Yes, No)	NO
Counting rules (ISO, AHERA, ASTM)	AHERA
Grid storage location	2709-EMR-49, S
Archive filter(s) storage location	Westmont
QA Type (Not QA, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interlab)	Not QA

F-Factor Calculation (Indirect Preps Only):

Enter data in appropriate cells provided to the right----->

Recording Rules:

Minimum Aspect Ratio (circle one):

none ≥ 3:1 (≥ 5:1)

Minimum Length (um): 0.5

Minimum Width (um): None

Stopping Rules:

Target Sensitivity:

Max # of GOs: 10

Target # of Structures:

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		Identification	Mineral Class (see below)				Sketch/ Comments	1 = yes, blank = no			Fract. GO Chrys.
			Primary	Total	Length	Width		LA	OA	C	NAM		Sketch	Photo	EDS	
1	I1	ND														
	I3	ND														
	I5	ND														
	I7	ND														
	I9	ND														
2	C10	ND														
	C8	ND														
	C6	ND														
	C4	ND														
	C2	ND														

F-factor Calculation:

Indirect Prep Inputs

- Fraction of primary filter used for indirect prep or ashing *[For dust and dustfall, enter 1.0]*
- First resuspension volume or rinsate volume (mL)
- Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

- Second resuspension volume (mL)
- Volume applied to secondary filter (mL) or used for serial dilution
- Third resuspension volume (mL)
- Volume applied to secondary filter (mL)

Input for Ashing of Secondary Filter

- Fraction of secondary filter used for ashing

LA = Libby-type amphibole

OA = Other (non-Libby type) amphibole

C = Chrysotile

NAM = Non-asbestos material

Grid opening traverse direction (circle one):

H Horizontal

(V) Vertical

Are prepped grids acceptable for analysis? (circle one) (Yes) No

If No, explain:

LB

BNSF 2009 OSHA
TEM Asbestos Structure Count

Laboratory name:	EMSL27
Instrument	JEOL 100 CX II (27-2)
Voltage (KV)	100
Magnification	19,000 X
Grid opening area (mm2)	0,013
Scale: 1L =	1
Scale: 1D =	1
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	360
Category (Field, Rep., Dup., Blank)	Blank
Primary filter pore size (um)	0.8

EPA Sample Number:	
Sample Type (A=Air, D=Dust, DF = Dustfall):	A
Air volume (L), dust area (cm2), or dustfall container area (cm2)	
Date received by lab	
Lab Job Number:	270900145
Lab Sample Number:	270900145
Number of grids prepared	2
Prepared by	R. Pescador
Preparation date	6/1/2009
EPA COC Number:	5539 052109-01
Secondary filter pore size (um)	0.2

Analyzed by	R. Pescador
Analysis date	6/ 2 /2009
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	IA
If sample type = air, is there loose material or debris in the cowl? (Yes, No)	
Counting rules (ISO, AHERA, ASTM)	AHERA
Grid storage location	2709-EMR-49, S.
Archive filter(s) storage location	Westmont
QA Type (Not QA, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interlab)	Lab Blank

F-Factor Calculation (Indirect Preps Only):

Enter data in appropriate cells provided to the right----->

Recording Rules:

Minimum Aspect Ratio (circle one):

none ≥ 3:1 (≥ 5:1)

Minimum Length (um): 0.5

Minimum Width (um): None

Stopping Rules:

Target Sensitivity:

Max # of GOs: 10

Target # of Structures:

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		Identification	Mineral Class (see below)				Sketch/ Comments	1 = yes, blank = no			Fract. GO Chrys.
			Primary	Total	Length	Width		LA	OA	C	NAM		Sketch	Photo	EDS	
1	D9	ND														
	D7	ND														
	D5	ND														
	D3	ND														
	D1	ND														
2	G2	ND														
	G4	ND														
	G6	ND														
	G8	ND														
	G10	ND														

F-factor Calculation:

Indirect Prep Inputs

1	Fraction of primary filter used for indirect prep or ashing *[For dust and dustfall, enter 1.0]*
100	First resuspension volume or rinsate volume (mL)
100	Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

	Second resuspension volume (mL)
	Volume applied to secondary filter (mL) or used for serial dilution
	Third resuspension volume (mL)
	Volume applied to secondary filter (mL)

Input for Ashing of Secondary Filter

	Fraction of secondary filter used for ashing

LA = Libby-type amphibole

OA = Other (non-Libby type) amphibole

C = Chrysotile

NAM = Non-asbestos material

Grid opening traverse direction (circle one):

H Horizontal

(V) Vertical

Are prepped grids acceptable for analysis? (circle one) (Yes) No

If No, explain:

RD

BNSF 2009 OSHA
TEM Asbestos Structure Count

Laboratory name:	EMSL27
Instrument	JEOL 100 CX II (27-2)
Voltage (KV)	100
Magnification	19,000 X
Grid opening area (mm2)	0,013
Scale: 1L =	1
Scale: 1D =	1
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	360
Category (Field, Rep., Dup., Blank)	Field
Primary filter pore size (um)	0.8

EPA Sample Number:	P-RH 052109
Sample Type (A=Air, D=Dust, DF = Dustfall):	A
Air volume (L), dust area (cm2), or dustfall container area (cm2)	1713
Date received by lab	5/27/2009
Lab Job Number:	270900145
Lab Sample Number:	270900145-0001
Number of grids prepared	
Prepared by	
Preparation date	
EPA COC Number:	5539 052109-01
Secondary filter pore size (um)	0.2

Analyzed by	
Analysis date	
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
If sample type = air, is there loose material or debris in the cowl? (Yes, No)	
Counting rules (ISO, AHERA, ASTM)	AHERA
Grid storage location	2709-EMR-49,
Archive filter(s) storage location	Westmont
QA Type (Not QA, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interlab)	Re-prep

F-Factor Calculation (Indirect Preps Only):

Enter data in appropriate cells provided to the right----->

Recording Rules:

Minimum Aspect Ratio (circle one):

none ≥ 3:1 (≥ 5:1)

Minimum Length (um): 0.5

Minimum Width (um): None

Stopping Rules:

Target Sensitivity: 0.005

Max # of GOs: 5

Target # of Structures:

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		Identification	Mineral Class (see below)				Sketch/ Comments	1 = yes, blank = no			Fract. GO Chrys.
			Primary	Total	Length	Width		LA	OA	C	NAM		Sketch	Photo	EDS	
		OVERLOADED														

F-factor Calculation:

Indirect Prep Inputs

- Fraction of primary filter used for indirect prep or ashing *[For dust and dustfall, enter 1.0]*
- First resuspension volume or rinsate volume (mL)
- Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

- Second resuspension volume (mL)
- Volume applied to secondary filter (mL) or used for serial dilution
- Third resuspension volume (mL)
- Volume applied to secondary filter (mL)

Input for Ashing of Secondary Filter

- Fraction of secondary filter used for ashing

LA = Libby-type amphibole

OA = Other (non-Libby type) amphibole

C = Chrysotile

NAM = Non-asbestos material

Grid opening traverse direction (circle one):

H Horizontal

V Vertical

Are prepped grids acceptable for analysis? (circle one) Yes No

If No, explain:

RP

BNSF 2009 OSHA
TEM Asbestos Structure Count

Laboratory name:	EMSL27
Instrument	JEOL 100 CX II (27-2)
Voltage (KV)	100
Magnification	19,000 X
Grid opening area (mm2)	0.013
Scale: 1L =	1
Scale: 1D =	1
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	360
Category (Field, Rep., Dup., Blank)	Field
Primary filter pore size (um)	0.8

EPA Sample Number:	P-RH 052109
Sample Type (A=Air, D=Dust, DF = Dustfall):	A
Air volume (L), dust area (cm2), or dustfall container area (cm2)	1713
Date received by lab	5/27/2009
Lab Job Number:	270900145
Lab Sample Number:	270900145-0001
Number of grids prepared	3
Prepared by	R. Pescador
Preparation date	6/1/2009
EPA COC Number:	5539 052109-01
Secondary filter pore size (um)	0.2

Analyzed by	R. Pescador
Analysis date	6/2/2009
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	I
If sample type = air, is there loose material or debris in the cowl? (Yes, No)	NO
Counting rules (ISO, AHERA, ASTM)	AHERA
Grid storage location	2709-EMR-49, U
Archive filter(s) storage location	Westmont
QA Type (Not QA, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interlab)	Re-prep

F-Factor Calculation (Indirect Preps Only):
Enter data in appropriate cells provided to the right----->

Recording Rules:

Minimum Aspect Ratio (circle one):
none ≥ 3:1 (≥ 5:1)

Minimum Length (um): 0.5

Minimum Width (um): None

Stopping Rules:

Target Sensitivity: 0.005

Max # of GOs: 7

Target # of Structures:

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		Identification	Mineral Class (see below)				Sketch/ Comments	1 = yes, blank = no			Fract. GO Chrys.
			Primary	Total	Length	Width		LA	OA	C	NAM		Sketch	Photo	EDS	
2	I2	ND														
	I4	ND														
	I6	ND														
3	D8	ND														
	D6	ND														
	D4	ND														
	D2	ND														

LA = Libby-type amphibole OA = Other (non-Libby type) amphibole C = Chrysotile NAM = Non-asbestos material

F-factor Calculation:

Indirect Prep Inputs

1.0	Fraction of primary filter used for indirect prep or ashing *[For dust and dustfall, enter 1.0]*
100	First resuspension volume or rinsate volume (mL)
50	Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

	Second resuspension volume (mL)
	Volume applied to secondary filter (mL) or used for serial dilution
	Third resuspension volume (mL)
	Volume applied to secondary filter (mL)

Input for Ashing of Secondary Filter

	Fraction of secondary filter used for ashing

Grid opening traverse direction (circle one):
H Horizontal
(V) Vertical

Are prepped grids acceptable for analysis? (circle one) (Yes) No
If No, explain:

INTERNAL CHAIN OF CUSTODY

5/29/2009 2:11:50 PM

Order ID: 270900146

Attn: Scott Carney
EMR, Inc.
11 East Superior Street
Suite 260
Duluth, MN 55802

Fax: (218) 625-2337 Phone: (218) 625-2332

Project: **5539 052209-01**
Samples collected 5/22/2009

Customer ID EMRI78
Customer PO:
Received: 05/27/09 10:50 PM

EMSL Order: 270900146
EMSL Proj ID: BNSF 2009 OSHA
Cust COC ID

Test: TEM AHERA **Matrix** Air **TAT:** 24 Hour **Qty:** 4

Acct Sts: **Slsprsn:** epodell **Logged:** rmahoney **Date:** 5/28/2009

Inter- Lab Sample Transfer

Samples Relinquished: Date
Samples Received: Date
Package Mailed to Westmont: Date
Method of Delivery:

Includes: (Circle)
Benchsheets Sample Slides Sample filters
Micrographs GridBox Other

Final Package Received: Date:

Sample Condition: ☒ Acceptable ☐ Unacceptable

Comments

Initial Prep (Initials/Lab): KMB **Date:** 6/1/09
Filter Prep (Initials/Lab): KMB **Date:** 6/1/09
Grid Prep (Initials/Lab): KMB **Date:** 6/1/09

For Spot 32 Projects Only:
QC Selection: Date:
Date Package Review: Date:
Date Package Mailed: Date:

Special Instructions

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900146	270900146-0001	PJT052209		5/28/2009 10:50:00 PM
270900146	270900146-0003	PRH052209		5/28/2009 10:50:00 PM
270900146	270900146-0006	PLP052209		5/28/2009 10:50:00 PM
270900146	270900146-0007	BBK052209		5/28/2009 10:50:00 PM

2709-EMR-49 (m-P)

2709-EMR-50 (F-G)

INTERNAL CHAIN OF CUSTODY

5/29/2009 8:35:55 AM

Order ID: 270900146

Attn: Scott Carney
EMR, Inc.
11 East Superior Street
Suite 260
Duluth, MN 55802

Fax: (218) 625-2337 Phone: (218) 625-2332

Project: **5539 052209-01**
Samples collected 5/22/2009

Customer ID EMRI78
Customer PO:
Received: 05/27/09 10:50 PM

EMSL Order: 270900146
EMSL Proj ID: BNSF 2009 OSHA
Cust COC ID

Test: TEM AHERA (Indirect) **Matrix** Air **TAT:** 24 Hour **Qty:** 3

Acct Sts: **Slsprsn:** epodell **Logged:** rmahoney **Date:** 5/28/2009

Inter- Lab Sample Transfer

Samples Relinquished: Date
Samples Received: Date
Package Mailed to Westmont: Date
Method of Delivery:

Includes: (Circle)
Benchsheets Sample Slides Sample filters
Micrographs GridBox Other

Final Package Received: Date:

Sample Condition: ☑ Acceptable ☐ Unacceptable

Comments

Initial Prep (Initials/Lab): KB **Date:** 5/28/09
Filter Prep (Initials/Lab): KB **Date:** 6/1/09
Grid Prep (Initials/Lab): KB **Date:** 6/1/09

For Special Projects Use Only
QC Selection: Date:
Date Package Review: Date:
Date Package Mailed: Date:

Special Instructions

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900146	270900146-0002	PDC052209 10mL		5/22/2009
270900146	270900146-0004	PDW052209 10 mL		5/22/2009
270900146	270900146-0005	PKF052209 15 mL		5/22/2009

INTERNAL SAMPLE CHAIN OF CUSTODY

5/29/2009 8:37:01 AM

Order ID: 270900146

Attn:	Scott Carney EMR, Inc. 11 East Superior Street Suite 260 Duluth, MN 55802	Customer ID:	EMRI78
		Customer PO:	
		Received:	05/27/09 10:50 PM
Fax:	(218) 625-2337 Phone: (218) 625-2332	EMSL Order:	270900146
Project:	**5539 052209-01** **Samples collected 5/22/2009**	EMSL Proj ID:	BNSF 2009 OSHA
		Cust COC ID	

Test: TEM AHERA **Matrix:** Air **TAT:** 24 Hour **Qty:** 4

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900146	270900146-0001	PJT052209		5/28/2009 10:50:00 PM

Comments:

ANALYZED:	RKm	**Date:**	6/2/09
Preliminary Data Sent to Special Projects:	RKm	**Date:**	6/2/09
Data Entry:		Date:	
Structure Review:		Date:	
Data Validation:		Date:	
Reported to Client:		Date:	

Micrographs:

	Micrograph Number	Type Diffraction or Morphology

INTERNAL SAMPLE CHAIN OF CUSTODY

5/29/2009 8:37:01 AM

Order ID: 270900146

Attn: Scott Carney
EMR, Inc.
11 East Superior Street
Suite 260
Duluth, MN 55802

Fax: (218) 625-2337 Phone: (218) 625-2332

Project: **5539 052209-01**
Samples collected 5/22/2009

Customer ID: EMRI78
Customer PO:
Received: 05/27/09 10:50 PM

EMSL Order: 270900146
EMSL Proj ID: BNSF 2009 OSHA
Cust COC ID

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900146	270900146-0003	PRH052209		5/28/2009 10:50:00 PM

Comments:

ANALYZED:	RKing	**Date:**	6/2/09
Preliminary Data Sent to Special Projects:	RKing	**Date:**	6/2/09
Data Entry:		Date:	
Structure Review:		Date:	
Data Validation:		Date:	
Reported to Client:		Date:	

Micrographs:

	Micrograph Number	Type Diffraction or Morphology

INTERNAL SAMPLE CHAIN OF CUSTODY

5/29/2009 2:13:13 PM

Order ID: 270900146

Attn:	Scott Carney EMR, Inc. 11 East Superior Street Suite 260 Duluth, MN 55802	Customer ID:	EMRI78
		Customer PO:	
		Received:	05/27/09 10:50 PM
Fax:	(218) 625-2337 Phone: (218) 625-2332	EMSL Order:	270900146
Project:	**5539 052209-01** **Samples collected 5/22/2009**	EMSL Proj ID:	BNSF 2009 OSHA
		Cust COC ID	

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900146	**270900146-0006**	**PLP052209**		**5/28/2009 10:50:00 PM**

Comments:

ANALYZED:	RCm	**Date:**	6/2/09
Preliminary Data Sent to Special Projects:	RCm	**Date:**	6/2/09
Data Entry:		Date:	
Structure Review:		Date:	
Data Validation:		Date:	
Reported to Client:		Date:	

Micrographs:

	Micrograph Number	Type Diffraction or Morphology

INTERNAL SAMPLE CHAIN OF CUSTODY

5/29/2009 8:37:02 AM

Order ID: 270900146

Attn:	Scott Carney EMR, Inc. 11 East Superior Street Suite 260 Duluth, MN 55802	Customer ID:	EMRI78
		Customer PO:	
		Received:	05/27/09 10:50 PM
Fax:	(218) 625-2337 Phone: (218) 625-2332	EMSL Order:	270900146
Project:	**5539 052209-01** **Samples collected 5/22/2009**	EMSL Proj ID:	BNSF 2009 OSHA
		Cust COC ID	

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900146	**270900146-0007**	**BBK052209**		**5/28/2009 10:50:00 PM**

Comments:

ANALYZED:	RKm	**Date:**	6/2/09
Preliminary Data Sent to Special Projects:	RKm	**Date:**	6/2/09
Data Entry:		Date:	
Structure Review:		Date:	
Data Validation:		Date:	
Reported to Client:		Date:	

Micrographs:

	Micrograph Number	Type Diffraction or Morphology

Test: **TEM AHERA (Indirect)** **Matrix:** Air **TAT:** 24 Hour **Qty:** 3

INTERNAL SAMPLE CHAIN OF CUSTODY

5/29/2009 8:37:02 AM

Order ID: 270900146

Attn: Scott Carney
EMR, Inc.
11 East Superior Street
Suite 260
Duluth, MN 55802

Fax: (218) 625-2337 Phone: (218) 625-2332

Project: **5539 052209-01**
Samples collected 5/22/2009

Customer ID: EMRI78
Customer PO:
Received: 05/27/09 10:50 PM

EMSL Order: 270900146
EMSL Proj ID: BNSF 2009 OSHA
Cust COC ID

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900146	270900146-0002	PDC052209		5/22/2009

Comments:

ANALYZED:	RLeq	**Date:**	6/2/09
Preliminary Data Sent to Special Projects:	RLeq	**Date:**	6/2/09
Data Entry:		Date:	
Structure Review:		Date:	
Data Validation:		Date:	
Reported to Client:		Date:	

Micrographs:

	Micrograph Number	Type Diffraction or Morphology

INTERNAL SAMPLE CHAIN OF CUSTODY

5/29/2009 8:37:02 AM

Order ID: 270900146

Attn: Scott Carney
EMR, Inc.
11 East Superior Street
Suite 260
Duluth, MN 55802

Fax: (218) 625-2337 Phone: (218) 625-2332

Project: **5539 052209-01**
Samples collected 5/22/2009

Customer ID: EMRI78
Customer PO:
Received: 05/27/09 10:50 PM

EMSL Order: 270900146
EMSL Proj ID: BNSF 2009 OSHA
Cust COC ID

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900146	270900146-0004	PDW052209		5/22/2009

Comments:

ANALYZED:	RKm	**Date:**	6/2/09
Preliminary Data Sent to Special Projects:	RKm	**Date:**	6/2/09
Data Entry:		Date:	
Structure Review:		Date:	
Data Validation:		Date:	
Reported to Client:		Date:	

Micrographs:

	Micrograph Number	Type Diffraction or Morphology

INTERNAL SAMPLE CHAIN OF CUSTODY

5/29/2009 8:37:02 AM

Order ID: 270900146

Attn: Scott Carney
EMR, Inc.
11 East Superior Street
Suite 260
Duluth, MN 55802

Fax: (218) 625-2337 Phone: (218) 625-2332

Project: **5539 052209-01**
Samples collected 5/22/2009

Customer ID: EMRI78
Customer PO:
Received: 05/27/09 10:50 PM

EMSL Order: 270900146
EMSL Proj ID: BNSF 2009 OSHA
Cust COC ID

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900146	270900146-0005	PKF052209		5/22/2009

Comments:

ANALYZED:	RKm	**Date:**	6/2/09
Preliminary Data Sent to Special Projects:	RKm	**Date:**	6/2/09
Data Entry:		Date:	
Structure Review:		Date:	
Data Validation:		Date:	
Reported to Client:		Date:	

Micrographs:

	Micrograph Number	Type Diffraction or Morphology

EMSL ANALYTICAL, INC.
107 4TH STREET WEST
LIBBY, MONTANA 59923
TEL: 406-293-9066
FAX: 406-293-7016

RE: Sample preparation for 270900146 (BNSF-EMR)

The following samples (P-DC052209, P-DW052209 & P-KF052209) were processed in the described method (M2):

M2 (loose material)

1. Loose materials in cassette consolidated with overloaded filter were prepared for ashing.
2. Samples placed in LFE asher until filters have been completely ashed.
3. Ashed sample (AS) re-suspended in 100mL particle water.
4. Fractions filtered (10, 15, 25 & 50mL) on 0.2µm filter backed by 5.0µm.
5. Selected volume processed to grids.

The following samples, P-JT052209, P-RH052209, P-LP052209, and B-BK052209 were processed directly.

Please refer to SOP No.: EPA-LIBBY-08 for further information.

KBarnes 6/1/09

Indirect Preparation Record

INDIRECT PREPARATION RECORD
REVISION 1
FEBRUARY 9, 2009

(TEM Air) TEM Dust PCM (Circle One)

EFA 360 (mm2)

		Indirect without ashing			Dilution Filtration						Indirect with Ashing			
Prepped by: KB	Date: 5/28/09	Fraction of filter used	1st Resuspend Volume	Volume applied to filter	Volume of 1st Resuspend used	2nd Re-suspend Volume	Volume applied to filter	Volume of 2nd Re-suspend used	3rd Re-suspend Volume	Volume applied to filter	Fraction of filter ashed	Volume used to resuspend residue	Volume applied to 2nd filter	OK to Prep to Grid?
Order ID	Sample #		mL	mL	mL	mL	mL	mL	mL	mL		mL	mL	Y/N
270900146	PDC 052209										1	100	10	Y
													15	
													25	
													50	
	PDW 052209										1	100	10	Y
													15	
													25	
													50	
	PKF 052209										1	100	10	
													15	Y
													25	
													50	
	FB										1	100	100	Y
	AB										1	100	100	Y
	MB	1	100	100										Y

001476

EMSL ANALYTICAL, INC.
LABORATORY • PRODUCTS • TRAINING

Asbestos Chain of Custody

EMSL Order Number *(Lab Use Only)*: 553905220 9-01

EMSL ANALYTICAL, INC.
107 HADDON AVENUE
WESTMONT, NJ 08108
PHONE: (856) 858-4800
FAX: (856) 858-4960

270900146

Company: EMR	**EMSL-Bill to:** ☐ Same ☐ Different If Bill to is Different note instructions in Comments**
Street: 11 East Superior St Suite 260	*Third Party Billing requires written authorization from third party*
City: Duluth **State/Province:** MN	**Zip/Postal Code:** 55802 **Country:** USA
Report To (Name): Scott Carney	**Fax #:**
Telephone #: (218) 625-2331	**Email Address:**
Project Name/Number:	
Please Provide Results: ☐ Fax ■ Email	**Purchase Order:** **U.S. State Samples Taken:** MT

Turnaround Time (TAT) Options* – Please Check

☐ 3 Hours ☐ 6 Hours ■ 24 Hrs ☐ 48 Hrs ☐ 3 Days ☐ 4 Days ☐ 5 Days ☐ 10 Days

*For TEM Air 3 hours/6 hours, please call ahead to schedule. *There is a premium charge for 3 Hour TEM AHERA or EPA Level II TAT. You will be asked to sign an authorization form for this service. Analysis completed in accordance with EMSL's Terms and Conditions located in the Analytical Price Guide.

PCM - Air
- ☐ NIOSH 7400
- ☐ w/ OSHA 8hr. TWA

PLM - Bulk (reporting limit)
- ☐ PLM EPA 600/R-93/116 (<1%)
- ☐ PLM EPA NOB (<1%)

Point Count
- ☐ 400 (<0.25%) ☐ 1000 (<0.1%)

Point Count w/Gravimetric
- ☐ 400 (<0.25%) ☐ 1000 (<0.1%)
- ☐ NYS 198.1 (friable in NY)
- ☐ NYS 198.6 NOB (non-friable-NY)
- ☐ NIOSH 9002 (<1%)

TEM - Air
- ■ AHERA 40 CFR, Part 763
- ☐ NIOSH 7402
- ☐ EPA Level II
- ☐ ISO 10312

TEM - Bulk
- ☐ TEM EPA NOB
- ☐ NYS NOB 198.4 (non-friable-NY)
- ☐ Chatfield SOP
- ☐ TEM Mass Analysis-EPA 600 sec. 2.5

TEM – Water: EPA 100.2
- Fibers >10µm ☐ Waste ☐ Drinking
- All Fiber Sizes ☐ Waste ☐ Drinking

TEM- Dust
- ☐ Microvac - ASTM D 5755
- ☐ Wipe - ASTM D6480
- ☐ Carpet Sonication (EPA 600/J-93/167)

Soil/Rock/Vermiculite
- ☐ PLM CARB 435 - A (0.25% sensitivity)
- ☐ PLM CARB 435 - B (0.1% sensitivity)
- ☐ TEM CARB 435 - B (0.1% sensitivity)
- ☐ TEM CARB 435 - C (0.01% sensitivity)
- ☐ EPA Protocol (Semi-Quantitative)
- ☐ EPA Protocol (Quantitative)

Other:
- ☐

☐ **Check For Positive Stop – Clearly Identify Homogenous Group**

Samplers Name: Michael McKay **Samplers Signature:** Michael McKay

Sample #	Sample Description	Volume/Area (Air) HA # (Bulk)	Date/Time Sampled
PJT052209	Operator-Jesus Tovar-Rail Machine	613	5/22/09 07:08-10:47
PDC052209	Operator-David Castro-Rail Machine	1288	5/22/09 07:09-14:33
PRH052209	Operator-Rex Hawa-Rail Machine	602	5/22/09 07:10-10:45
PDW052209	Operator-Duane Williams-Rail Machine	1103	5/22/09 07:11-14:32
PKF052209	Operator-Keith Francis-Rail Machine	1100	5/22/09 07:11-14:31
PLP052209	Operator-Leroy Paulson-Rail Machine	540	5/22/09 07:12-10:48
BBK052209	Field Blank-Opened		5/22/09

OL Loose Debris

OL Loose Debris

OL Loose Debris

Client Sample # (s): - **Total # of Samples:** 7

Relinquished (Client): Michael McKay **Date:** 5/23/09 **Time:** 12:00

Received (Lab): R/L McKenney **Date:** 5/27/09 **Time:** 1050

Comments/Special Instructions:

P = Personal B = Blank Opened

EMSL Analytical, Inc.
107 West 4th Street, Libby, MT 59923
Phone: (406) 293-9066 Fax: Email: mobileasbestoslab@emsl.com

Attn: **Scott Carney**
EMR, Inc.
11 East Superior Street
Suite 260
Duluth, MN 55802

Fax: (218) 625-2337 Phone: (218) 625-2332

Project: **5539 052209-01**
Samples collected 5/22/2009

Customer ID: EMRI78
Customer PO:
Received: 05/27/09 10:50 PM
EMSL Order: 270900146

EMSL Proj: BNSF 2009 OSHA
Analysis Date: 6/2/2009

Sampling Date: 5/22/2009

Asbestos Fiber Analysis by Transmission Electron Microscopy (TEM) Performed by EPA 40 CFR Part 763 Appendix A to Subpart E

Sample / Location	Volume (Liters)	Area Analyzed (mm^2)	Non Asb	Asbestos Type(s)	# Structures ≥ 0.5μ < 5μ	# Structures ≥5μ	Analytical Sensitivity (S/cc)	Asbestos Concentration (S/mm^2)	Asbestos Concentration (S/cc)
PJT052209 *270900146-0001*	613.00	0.1300		None Detected			0.0048	**<7.70**	**<0.0048**
PRH052209 *270900146-0003*	602.00	0.1300		None Detected			0.0049	**<7.70**	**<0.0049**
PLP052209 *270900146-0006*	540.00	0.1300		None Detected			0.0055	**<7.70**	**<0.0055**
BBK052209 *270900146-0007* Field Blank		0.1300		None Detected				**<7.70**	

Analyst(s)

Ron Mahoney (4)

R. K. Mahoney, Laboratory Manager
or other approved signatory

Disclaimers: The laboratory is not responsible for data reported in structures/cc, which is dependent on volume collected by non-laboratory personnel. This lab is only responsible for data reported in structures/mm^2. This report may not be reproduced, except in full, without written approval by EMSL. This report must not be used to claim product endorsement by NVLAP or any agency of the U.S. Government. This report relates only to the samples reported above. Quality control data (including 95% confidence limits and laboratory and analysts' accuracy and precision) is available upon request. As per 40 CFR 763, the initial screening test may not be applied to samples with collected volumes of <1200 liters. The test results contained within this report meet the requirements of NELAC unless otherwise noted. Samples received in good condition unless otherwise noted.

Accredited for NVLAP PLM/TEM. NVLAP Libby code: 200745-0

EMSL Analytical, Inc.
107 West 4th Street, Libby, MT 59923
Phone: (406) 293-9066 Fax: Email: mobileasbestoslab@emsl.com

Attn: **Scott Carney**
EMR, Inc.
11 East Superior Street
Suite 260
Duluth, MN 55802

Fax: (218) 625-2337 Phone: (218) 625-2332

Project: **5539 052209-01**
Samples collected 5/22/2009

Customer ID: EMRI78
Customer PO:
Received: 05/27/09 10:50 PM
EMSL Order: 270900146

EMSL Proj: BNSF 2009 OSHA
Analysis Date: 6/2/2009

Sampling Date: 5/22/2009

Asbestos Fiber Analysis by Transmission Electron Microscopy (TEM) Performed by AHERA -EPA 40 CFR Part 763 Appendix A to Subpart E (Modified for Indirect Prep)

Sample	Location	Volume (Liters)	Area Analyzed (mm^2)	Non Asb	Asbestos Type(s)	# Structures ≥ 0.5μ < 5μ	# Structures ≥5μ	Analytical Sensitivity (S/cc)	Total Asbestos Concentration (S/mm^2)	Total Asbestos Concentration (S/cc)
PDC052209 *270900146-0002*		1288.00	0.1300		None Detected			0.0220	**<72.00**	**<0.0220**
PDW052209 *270900146-0004*		1103.00	0.1300		None Detected			0.0250	**<72.00**	**<0.0250**
PKF052209 *270900146-0005*		1100.00	0.1300		None Detected			0.0170	**<48.00**	**<0.0170**

Analyst(s)

Ron Mahoney (3)

R. K. Mahoney, Laboratory Manager
or other approved signatory

BNSF 2009 OSHA
TEM Asbestos Structure Count

Laboratory name:	EMSL27
Instrument	JEOL 1200 EX II (27-3)
Voltage (KV)	100
Magnification	20,000 X
Grid opening area (mm2)	0.013
Scale: 1L =	1
Scale: 1D =	1
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	360
Category (Field, Rep., Dup., Blank)	C Field 6/2/09
Primary filter pore size (um)	0.8

EPA Sample Number:	PJT052209
Sample Type (A=Air, D=Dust, DF = Dustfall):	A
Air volume (L), dust area (cm2), or dustfall container area (cm2)	613
Date received by lab	5/27/2009
Lab Job Number:	270900146
Lab Sample Number:	270900146-0001
Number of grids prepared	3
Prepared by	K. Barnes
Preparation date	6/1/2009
EPA COC Number:	5539 052209-01
Secondary filter pore size (um)	0.2

Analyzed by	R. Mahoney
Analysis date	6/2/2009
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
If sample type = air, is there loose material or debris in the cowl? (Yes, No)	Yes
Counting rules (ISO, AHERA, ASTM)	AHERA
Grid storage location	2709-EMR-49, M
Archive filter(s) storage location	Westmont
QA Type (Not QA, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interlab)	Not QA

F-Factor Calculation (Indirect Preps Only):

Enter data in appropriate cells provided to the right----->

Recording Rules:

Minimum Aspect Ratio (circle one):

none ≥ 3:1 (≥ 5:1)

Minimum Length (um):	0.5
Minimum Width (um):	None

Stopping Rules:

Target Sensitivity:	0.0050
Max # of GOs:	10
Target # of Structures:	50

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		Identification	Mineral Class (see below)				Sketch/ Comments	1 = yes, blank = no			Fract. GO Chrys.
			Primary	Total	Length	Width		LA	OA	C	NAM		Sketch	Photo	EDS	
1	G9	ND														
	G7	ND														
	G5	ND														
	G3	ND														
	G1	ND														
2	D10	ND														
	D8	ND														
	D6	ND														
	D4	ND														
	D2	ND														

F-factor Calculation:

Indirect Prep Inputs

- Fraction of primary filter used for indirect prep or ashing *[For dust and dustfall, enter 1.0]*
- First resuspension volume or rinsate volume (mL)
- Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

- Second resuspension volume (mL)
- Volume applied to secondary filter (mL) or used for serial dilution
- Third resuspension volume (mL)
- Volume applied to secondary filter (mL)

Input for Ashing of Secondary Filter

- Fraction of secondary filter used for ashing

LA = Libby-type amphibole OA = Other (non-Libby type) amphibole C = Chrysotile NAM = Non-asbestos material

Grid opening traverse direction (circle one):

H Horizontal

(V) Vertical

Are prepped grids acceptable for analysis? (circle one) (Yes) No

If No, explain:

BNSF 2009 OSHA
TEM Asbestos Structure Count

Laboratory name:	EMSL27
Instrument	JEOL 1200 EX II (27-3)
Voltage (KV)	100
Magnification	20,000 X
Grid opening area (mm2)	0.013
Scale: 1L =	1
Scale: 1D =	1
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	360
Category (Field, Rep., Dup., Blank)	c Field RFW 6/26/09
Primary filter pore size (um)	0.8

EPA Sample Number:	PDC052209
Sample Type (A=Air, D=Dust, DF = Dustfall):	A
Air volume (L), dust area (cm2), or dustfall container area (cm2)	1288
Date received by lab	5/27/2009
Lab Job Number:	270900146
Lab Sample Number:	270900146-0002
Number of grids prepared	
Prepared by	
Preparation date	
EPA COC Number:	5539 052209-01
Secondary filter pore size (um)	0.2

Analyzed by	
Analysis date	
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
If sample type = air, is there loose material or debris in the cowl? (Yes, No)	Yes
Counting rules (ISO, AHERA, ASTM)	AHERA
Grid storage location	~~2700 EMR 49, M~~ RFW 6/2/09
Archive filter(s) storage location	Westmont
QA Type (Not QA, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interlab)	Not QA

F-Factor Calculation (Indirect Preps Only):

Enter data in appropriate cells provided to the right—->

Recording Rules:

Minimum Aspect Ratio (circle one):

none ≥ 3:1 (≥ 5:1)

Minimum Length (um):	0.5
Minimum Width (um):	None

Stopping Rules:

Target Sensitivity:	0.0050
Max # of GOs:	~~40~~ 5 RFW 6/2/09
Target # of Structures:	50

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		Identification	Mineral Class (see below)				Sketch/ Comments	1 = yes, blank = no			Fract. GO Chrys.
			Primary	Total	Length	Width		LA	OA	C	NAM		Sketch	Photo	EDS	
							Overloaded									

F-factor Calculation:

Indirect Prep Inputs

- Fraction of primary filter used for indirect prep or ashing *[For dust and dustfall, enter 1.0]*
- First resuspension volume or rinsate volume (mL)
- Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

- Second resuspension volume (mL)
- Volume applied to secondary filter (mL) or used for serial dilution
- Third resuspension volume (mL)
- Volume applied to secondary filter (mL)

Input for Ashing of Secondary Filter

- Fraction of secondary filter used for ashing

LA = Libby-type amphibole OA = Other (non-Libby type) amphibole C = Chrysotile NAM = Non-asbestos material

Grid opening traverse direction (circle one):

H Horizontal

V Vertical

Are prepped grids acceptable for analysis? (circle one) Yes No

If No, explain:

BNSF 2009 OSHA
TEM Asbestos Structure Count

Laboratory name:	EMSL27
Instrument	JEOL 1200 EX II (27-3)
Voltage (KV)	100
Magnification	20,000 X
Grid opening area (mm2)	0.013
Scale: 1L =	1
Scale: 1D =	1
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	360
Category (Field, Rep., Dup., Blank)	Field RC9 6/2/09
Primary filter pore size (um)	0.8

EPA Sample Number:	PDC052209
Sample Type (A=Air, D=Dust, DF = Dustfall):	A
Air volume (L), dust area (cm2), or dustfall container area (cm2)	1288
Date received by lab	5/27/2009
Lab Job Number:	270900146
Lab Sample Number:	270900146-0002
Number of grids prepared	3
Prepared by	K. Barnes
Preparation date	6/1/2009
EPA COC Number:	5539 052209-01
Secondary filter pore size (um)	0.2

Analyzed by	R. Mahoney
Analysis date	6/2/2009
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	IA
If sample type = air, is there loose material or debris in the cowl? (Yes, No)	Yes
Counting rules (ISO, AHERA, ASTM)	AHERA
Grid storage location	2709-EMR-49, M
Archive filter(s) storage location	Westmont
QA Type (Not QA, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interlab)	Not QA

F-Factor Calculation (Indirect Preps Only):

Enter data in appropriate cells provided to the right—->

Recording Rules:

Minimum Aspect Ratio (circle one): none ≥ 3:1 (≥ 5:1)

Minimum Length (um):	0.5
Minimum Width (um):	None

Stopping Rules:

Target Sensitivity:	0.0050
Max # of GOs:	10
Target # of Structures:	50

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		Identification	Mineral Class (see below)				Sketch/ Comments	1 = yes, blank = no			Fract. GO Chrys.
			Primary	Total	Length	Width		LA	OA	C	NAM		Sketch	Photo	EDS	
1	H10	ND														
	H8	ND														
	H6	ND														
	H4	ND														
	H2	ND														
2	D10	ND														
	D8	ND														
	D6	ND														
	D4	ND														
	D2	ND														

F-factor Calculation:

Indirect Prep Inputs

1	Fraction of primary filter used for indirect prep or ashing *[For dust and dustfall, enter 1.0]*
100	First resuspension volume or rinsate volume (mL)
10	Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

	Second resuspension volume (mL)
	Volume applied to secondary filter (mL) or used for serial dilution
	Third resuspension volume (mL)
	Volume applied to secondary filter (mL)

Input for Ashing of Secondary Filter

	Fraction of secondary filter used for ashing

LA = Libby-type amphibole OA = Other (non-Libby type) amphibole C = Chrysotile NAM = Non-asbestos material

Grid opening traverse direction (circle one):

H Horizontal

(V) Vertical

Are prepped grids acceptable for analysis? (circle one) (Yes) No

If No, explain:

BNSF 2009 OSHA
TEM Asbestos Structure Count

Laboratory name:	EMSL27
Instrument	JEOL 1200 EX II (27-3)
Voltage (KV)	100
Magnification	20,000 X
Grid opening area (mm2)	0.013
Scale: 1L =	1
Scale: 1D =	1
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	360
Category (Field, Rep., Dup., Blank)	c Field RKM 6/2/09
Primary filter pore size (um)	0.8

EPA Sample Number:	PRH052209
Sample Type (A=Air, D=Dust, DF = Dustfall):	A
Air volume (L), dust area (cm2), or dustfall container area (cm2)	602
Date received by lab	5/27/2009
Lab Job Number:	270900146
Lab Sample Number:	270900146-0003
Number of grids prepared	3
Prepared by	K. Barnes
Preparation date	6/1/2009
EPA COC Number:	5539 052209-01
Secondary filter pore size (um)	0.2

Analyzed by	R. Mahoney
Analysis date	6/2/2009
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
If sample type = air, is there loose material or debris in the cowl? (Yes, No)	Yes
Counting rules (ISO, AHERA, ASTM)	AHERA
Grid storage location	2709-EMR-49, M
Archive filter(s) storage location	Westmont
QA Type (Not QA, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interlab)	Not QA

F-Factor Calculation (Indirect Preps Only):

Enter data in appropriate cells provided to the right----->

Recording Rules:

Minimum Aspect Ratio (circle one):

none ≥ 3:1 (≥ 5:1)

Minimum Length (um):	0.5
Minimum Width (um):	None

Stopping Rules:

Target Sensitivity:	0.0050
Max # of GOs:	10
Target # of Structures:	50

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		Identification	Mineral Class (see below)				Sketch/ Comments	1 = yes, blank = no			Fract. GO Chrys.
			Primary	Total	Length	Width		LA	OA	C	NAM		Sketch	Photo	EDS	
1	D1	ND														
	D3	ND														
	D5	ND														
	D7	ND														
	D9	ND														
2	D1	ND														
	D3	ND														
	D5	ND														
	D7	ND														
	D9	ND														

F-factor Calculation:

Indirect Prep Inputs

- Fraction of primary filter used for indirect prep or ashing *[For dust and dustfall, enter 1.0]*
- First resuspension volume or rinsate volume (mL)
- Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

- Second resuspension volume (mL)
- Volume applied to secondary filter (mL) or used for serial dilution
- Third resuspension volume (mL)
- Volume applied to secondary filter (mL)

Input for Ashing of Secondary Filter

- Fraction of secondary filter used for ashing

LA = Libby-type amphibole OA = Other (non-Libby type) amphibole C = Chrysotile NAM = Non-asbestos material

Grid opening traverse direction (circle one):

H Horizontal

(V) Vertical

Are prepped grids acceptable for analysis? (circle one) (Yes) No

If No, explain:

BNSF 2009 OSHA
TEM Asbestos Structure Count

Laboratory name:	EMSL27
Instrument	JEOL 1200 EX II (27-3)
Voltage (KV)	100
Magnification	20,000 X
Grid opening area (mm2)	0.013
Scale: 1L =	1
Scale: 1D =	1
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	360
Category (Field, Rep., Dup., Blank)	C Field Rep 6/3/09
Primary filter pore size (um)	0.8

EPA Sample Number:	PDW052209
Sample Type (A=Air, D=Dust, DF = Dustfall):	A
Air volume (L), dust area (cm2), or dustfall container area (cm2)	1103
Date received by lab	5/27/2009
Lab Job Number:	270900146
Lab Sample Number:	270900146-0004
Number of grids prepared	
Prepared by	
Preparation date	
EPA COC Number:	5539 052209-01
Secondary filter pore size (um)	0.2

Analyzed by	
Analysis date	
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
If sample type = air, is there loose material or debris in the cowl? (Yes, No)	Yes
Counting rules (ISO, AHERA, ASTM)	AHERA
Grid storage location	
Archive filter(s) storage location	Westmont
QA Type (Not QA, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interlab)	Not QA

F-Factor Calculation (Indirect Preps Only):

Enter data in appropriate cells provided to the right----->

Recording Rules:

Minimum Aspect Ratio (circle one):

none ≥ 3:1 (≥ 5:1)

Minimum Length (um):	0.5
Minimum Width (um):	None

Stopping Rules:

Target Sensitivity:	0.0050
Max # of GOs:	10
Target # of Structures:	50

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		Identification	Mineral Class (see below)				Sketch/ Comments	1 = yes, blank = no			Fract. GO Chrys.
			Primary	Total	Length	Width		LA	OA	C	NAM		Sketch	Photo	EDS	
							Overloaded									

F-factor Calculation:

Indirect Prep Inputs

- Fraction of primary filter used for indirect prep or ashing *[For dust and dustfall, enter 1.0]*
- First resuspension volume or rinsate volume (mL)
- Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

- Second resuspension volume (mL)
- Volume applied to secondary filter (mL) or used for serial dilution
- Third resuspension volume (mL)
- Volume applied to secondary filter (mL)

Input for Ashing of Secondary Filter

- Fraction of secondary filter used for ashing

LA = Libby-type amphibole OA = Other (non-Libby type) amphibole C = Chrysotile NAM = Non-asbestos material

Grid opening traverse direction (circle one):

H Horizontal

V Vertical

Are prepped grids acceptable for analysis? (circle one) Yes No

If No, explain:

BNSF 2009 OSHA
TEM Asbestos Structure Count

Laboratory name:	EMSL27
Instrument	JEOL 1200 EX II (27-3)
Voltage (KV)	100
Magnification	20,000 X
Grid opening area (mm2)	0.013
Scale: 1L =	1
Scale: 1D =	1
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	360
Category (Field, Rep., Dup., Blank)	e Rep~ Field 6/2/09
Primary filter pore size (um)	0.8

EPA Sample Number:	PDW052209
Sample Type (A=Air, D=Dust, DF = Dustfall):	A
Air volume (L), dust area (cm2), or dustfall container area (cm2)	1103
Date received by lab	5/27/2009
Lab Job Number:	270900146
Lab Sample Number:	270900146-0004
Number of grids prepared	3
Prepared by	K. Barnes
Preparation date	6/1/2009
EPA COC Number:	5539 052209-01
Secondary filter pore size (um)	0.2

Analyzed by	R. Mahoney
Analysis date	6/2/2009
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	IA
If sample type = air, is there loose material or debris in the cowl? (Yes, No)	Yes
Counting rules (ISO, AHERA, ASTM)	AHERA
Grid storage location	2709-EMR-49, N
Archive filter(s) storage location	Westmont
QA Type (Not QA, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interlab)	Not QA

F-Factor Calculation (Indirect Preps Only):

Enter data in appropriate cells provided to the right----->

Recording Rules:

Minimum Aspect Ratio (circle one):

none ≥ 3:1 (≥ 5:1)

Minimum Length (um):	0.5
Minimum Width (um):	None

Stopping Rules:

Target Sensitivity:	0.0050
Max # of GOs:	10
Target # of Structures:	50

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		Identification	Mineral Class (see below)				Sketch/ Comments	1 = yes, blank = no			Fract. GO Chrys.
			Primary	Total	Length	Width		LA	OA	C	NAM		Sketch	Photo	EDS	
1	G1	ND														
	G3	ND														
	G5	ND														
	G7	ND														
	G9	ND														
2	E1	ND														
	E3	ND														
	E5	ND														
	E7	ND														
	E9	ND														

F-factor Calculation:

Indirect Prep Inputs

1	Fraction of primary filter used for indirect prep or ashing *[For dust and dustfall, enter 1.0]*
100	First resuspension volume or rinsate volume (mL)
10	Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

	Second resuspension volume (mL)
	Volume applied to secondary filter (mL) or used for serial dilution
	Third resuspension volume (mL)
	Volume applied to secondary filter (mL)

Input for Ashing of Secondary Filter

	Fraction of secondary filter used for ashing

LA = Libby-type amphibole OA = Other (non-Libby type) amphibole C = Chrysotile NAM = Non-asbestos material

Grid opening traverse direction (circle one):

H Horizontal

(V) Vertical

Are prepped grids acceptable for analysis? (circle one) (Yes) No

If No, explain:

BNSF 2009 OSHA
TEM Asbestos Structure Count

Laboratory name:	EMSL27
Instrument	JEOL 1200 EX II (27-3)
Voltage (KV)	100
Magnification	20,000 X
Grid opening area (mm2)	0.013
Scale: 1L =	1
Scale: 1D =	1
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	360
Category (Field, Rep., Dup., Blank)	e RKM Fld 6/2/09
Primary filter pore size (um)	0.8

EPA Sample Number:	PKF052209
Sample Type (A=Air, D=Dust, DF = Dustfall):	A
Air volume (L), dust area (cm2), or dustfall container area (cm2)	1100
Date received by lab	5/27/2009
Lab Job Number:	270900146
Lab Sample Number:	270900146-0005
Number of grids prepared	
Prepared by	
Preparation date	
EPA COC Number:	5539 052209-01
Secondary filter pore size (um)	0.2

Analyzed by	
Analysis date	
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
If sample type = air, is there loose material or debris in the cowl? (Yes, No)	Yes
Counting rules (ISO, AHERA, ASTM)	AHERA
Grid storage location	
Archive filter(s) storage location	Westmont
QA Type (Not QA, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interlab)	Not QA

F-Factor Calculation (Indirect Preps Only):

Enter data in appropriate cells provided to the right---->

Recording Rules:	
Minimum Aspect Ratio (circle one): none ≥ 3:1 (≥ 5:1)	
Minimum Length (um):	0.5
Minimum Width (um):	None

Stopping Rules:	
Target Sensitivity:	0.0050
Max # of GOs:	~~10~~ 6 RKM 6/2/09
Target # of Structures:	50

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		Identification	Mineral Class (see below)				Sketch/ Comments	1 = yes, blank = no			Fract. GO Chrys.
			Primary	Total	Length	Width		LA	OA	C	NAM		Sketch	Photo	EDS	
							Overloaded									

F-factor Calculation:

Indirect Prep Inputs

- Fraction of primary filter used for indirect prep or ashing *[For dust and dustfall, enter 1.0]*
- First resuspension volume or rinsate volume (mL)
- Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

- Second resuspension volume (mL)
- Volume applied to secondary filter (mL) or used for serial dilution
- Third resuspension volume (mL)
- Volume applied to secondary filter (mL)

Input for Ashing of Secondary Filter

- Fraction of secondary filter used for ashing

LA = Libby-type amphibole OA = Other (non-Libby type) amphibole C = Chrysotile NAM = Non-asbestos material

Grid opening traverse direction (circle one):
H Horizontal
V Vertical

Are prepped grids acceptable for analysis? (circle one) Yes No
If No, explain:

BNSF 2009 OSHA
TEM Asbestos Structure Count

Laboratory name:	EMSL27
Instrument	JEOL 1200 EX II (27-3)
Voltage (KV)	100
Magnification	20,000 X
Grid opening area (mm2)	0.013
Scale: 1L =	1
Scale: 1D =	1
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	3600
Category (Field, Rep., Dup., Blank)	C Rep Field 6/2/09
Primary filter pore size (um)	0.8

EPA Sample Number:	PKF052209
Sample Type (A=Air, D=Dust, DF = Dustfall):	A
Air volume (L), dust area (cm2), or dustfall container area (cm2)	1100
Date received by lab	5/27/2009
Lab Job Number:	270900146
Lab Sample Number:	270900146-0005
Number of grids prepared	3
Prepared by	K. Barnes
Preparation date	6/1/2009
EPA COC Number:	5539 052209-01
Secondary filter pore size (um)	0.2

Analyzed by	R. Mahoney
Analysis date	6/2/2009
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	IA
If sample type = air, is there loose material or debris in the cowl? (Yes, No)	Yes
Counting rules (ISO, AHERA, ASTM)	AHERA
Grid storage location	2709-EMR-49, N
Archive filter(s) storage location	Westmont
QA Type (Not QA, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interlab)	Not QA

F-Factor Calculation (Indirect Preps Only):

Enter data in appropriate cells provided to the right---->

Recording Rules:

Minimum Aspect Ratio (circle one): none ≥ 3:1 (≥ 5:1)

Minimum Length (um):	0.5
Minimum Width (um):	None

Stopping Rules:

Target Sensitivity:	0.0050
Max # of GOs:	10
Target # of Structures:	50

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		Identification	Mineral Class (see below)				Sketch/ Comments	1 = yes, blank = no			Fract. GO Chrys.
			Primary	Total	Length	Width		LA	OA	C	NAM		Sketch	Photo	EDS	
1	C10	ND														
	C8	ND														
	C6	ND														
	C4	ND														
	C2	ND														
2	D10	ND														
	D8	ND														
	D6	ND														
	D4	ND														
	D2	ND														

F-factor Calculation:

Indirect Prep Inputs

1	Fraction of primary filter used for indirect prep or ashing *[For dust and dustfall, enter 1.0]*
100	First resuspension volume or rinsate volume (mL)
15	Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

	Second resuspension volume (mL)
	Volume applied to secondary filter (mL) or used for serial dilution
	Third resuspension volume (mL)
	Volume applied to secondary filter (mL)

Input for Ashing of Secondary Filter

	Fraction of secondary filter used for ashing

LA = Libby-type amphibole OA = Other (non-Libby type) amphibole C = Chrysotile NAM = Non-asbestos material

Grid opening traverse direction (circle one):
H Horizontal
(V) Vertical

Are prepped grids acceptable for analysis? (circle one) (Yes) No

If No, explain:

BNSF 2009 OSHA
TEM Asbestos Structure Count

Laboratory name:	EMSL27
Instrument	JEOL 1200 EX II (27-3)
Voltage (KV)	100
Magnification	20,000 X
Grid opening area (mm2)	0.013
Scale: 1L =	1
Scale: 1D =	1
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	360
Category (Field, Rep., Dup., Blank)	Field
Primary filter pore size (um)	0.8

EPA Sample Number:	PLP052209
Sample Type (A=Air, D=Dust, DF = Dustfall):	A
Air volume (L), dust area (cm2), or dustfall container area (cm2)	540
Date received by lab	5/27/2009
Lab Job Number:	270900146
Lab Sample Number:	270900146-0006
Number of grids prepared	3
Prepared by	K. Barnes
Preparation date	6/1/2009
EPA COC Number:	5539 052209-01
Secondary filter pore size (um)	0.2

Analyzed by	R. Mahoney
Analysis date	6/2/2009
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
If sample type = air, is there loose material or debris in the cowl? (Yes, No)	Yes
Counting rules (ISO, AHERA, ASTM)	AHERA
Grid storage location	2709-EMR-49, N
Archive filter(s) storage location	Westmont
QA Type (Not QA, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interlab)	Not QA

F-Factor Calculation (Indirect Preps Only):

Enter data in appropriate cells provided to the right----->

Recording Rules:

Minimum Aspect Ratio (circle one):

none ≥ 3:1 (≥ 5:1)

Minimum Length (um):	0.5
Minimum Width (um):	None

Stopping Rules:

Target Sensitivity:	0.0050
Max # of GOs:	10
Target # of Structures:	50

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		Identification	Mineral Class (see below)				Sketch/ Comments	1 = yes, blank = no			Fract. GO Chrys.
			Primary	Total	Length	Width		LA	OA	C	NAM		Sketch	Photo	EDS	
1	F10	ND														
	F8	ND														
	F6	ND														
	F4	ND														
	F2	ND														
2	G10	ND														
	G8	ND														
	G6	ND														
	G4	ND														
	G2	ND														

F-factor Calculation:

Indirect Prep Inputs

	Fraction of primary filter used for indirect prep or ashing *[For dust and dustfall, enter 1.0]*
	First resuspension volume or rinsate volume (mL)
	Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

	Second resuspension volume (mL)
	Volume applied to secondary filter (mL) or used for serial dilution
	Third resuspension volume (mL)
	Volume applied to secondary filter (mL)

Input for Ashing of Secondary Filter

	Fraction of secondary filter used for ashing

LA = Libby-type amphibole OA = Other (non-Libby type) amphibole C = Chrysotile NAM = Non-asbestos material

Grid opening traverse direction (circle one):

H Horizontal

(V) Vertical

Are prepped grids acceptable for analysis? (circle one) (Yes) No

If No, explain:

BNSF 2009 OSHA
TEM Asbestos Structure Count

Laboratory name:	EMSL27
Instrument	JEOL 1200 EX II (27-3)
Voltage (KV)	100
Magnification	20,000 X
Grid opening area (mm2)	0.013
Scale: 1L =	1
Scale: 1D =	1
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	360
Category (Field, Rep., Dup., Blank)	Blank
Primary filter pore size (um)	0.8

EPA Sample Number:	BBK052209
Sample Type (A=Air, D=Dust, DF = Dustfall):	A
Air volume (L), dust area (cm2), or dustfall container area (cm2)	0
Date received by lab	5/27/2009
Lab Job Number:	270900146
Lab Sample Number:	270900146-0007
Number of grids prepared	3
Prepared by	K. Barnes
Preparation date	6/1/2009
EPA COC Number:	5539 052209-01
Secondary filter pore size (um)	0.2

Analyzed by	R. Mahoney
Analysis date	6/2/2009
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
If sample type = air, is there loose material or debris in the cowl? (Yes, No)	Yes
Counting rules (ISO, AHERA, ASTM)	AHERA
Grid storage location	2709-EMR-49, O
Archive filter(s) storage location	Westmont
QA Type (Not QA, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interlab)	Not QA

F-Factor Calculation (Indirect Preps Only):

Enter data in appropriate cells provided to the right---->

Recording Rules:

Minimum Aspect Ratio (circle one):

none ≥ 3:1 (≥ 5:1)

Minimum Length (um):	0.5
Minimum Width (um):	None

Stopping Rules:

Target Sensitivity:	
Max # of GOs:	10
Target # of Structures:	50

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		Identification	Mineral Class (see below)				Sketch/ Comments	1 = yes, blank = no			Fract. GO Chrys.
			Primary	Total	Length	Width		LA	OA	C	NAM		Sketch	Photo	EDS	
1	F10	ND														
	F8	ND														
	F6	ND														
	F4	ND														
	F2	ND														
2	B10	ND														
	B8	ND														
	B6	ND														
	B4	ND														
	B2	ND														

F-factor Calculation:

Indirect Prep Inputs

	Fraction of primary filter used for indirect prep or ashing *[For dust and dustfall, enter 1.0]*
	First resuspension volume or rinsate volume (mL)
	Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

	Second resuspension volume (mL)
	Volume applied to secondary filter (mL) or used for serial dilution
	Third resuspension volume (mL)
	Volume applied to secondary filter (mL)

Input for Ashing of Secondary Filter

	Fraction of secondary filter used for ashing

LA = Libby-type amphibole OA = Other (non-Libby type) amphibole C = Chrysotile NAM = Non-asbestos material

Grid opening traverse direction (circle one):

H Horizontal

(V) Vertical

Are prepped grids acceptable for analysis? (circle one) (Yes) No

If No, explain:

INTERNAL CHAIN OF CUSTODY

5/20/2009 10:12:40 AM

Order ID: 270900123

Attn: Scott Carney
EMR, Inc.
11 East Superior Street
Suite 260
Duluth, MN 55802

Fax: (218) 625-2337 Phone: (218) 625-2332

Project: **Samples collected 5/19/2009**

Customer ID EMRI78
Customer PO:
Received: 05/20/09 8:45 AM

EMSL Order: 270900123
EMSL Proj ID: BNSF 2009 OSHA
Cust COC ID

Test: TEM AHERA (Indirect) **Matrix** Air **TAT:** 24 Hour **Qty:** 6

Acct Sts: **Slsprsn:** epodell **Logged:** rmahoney **Date:** 5/20/2009

Inter- Lab Sample Transfer

Samples Relinquished: _____ Date _____
Samples Received: _____ Date _____
Package Mailed to Westmont: _____ Date _____
Method of Delivery: _____

Includes: (Circle)
Benchsheets Sample Slides Sample filters
Micrographs GridBox Other _____

Final Package Received: _____ Date: _____

Sample Condition: ☒ Acceptable ☐ Unacceptable

Comments

Initial Prep (Initials/Lab): EJW **Date:** 5/20/09
Filter Prep (Initials/Lab): ~~RMF~~ emf **Date:** 5/20/09 MM 5/26/09
Grid Prep (Initials/Lab): emf **Date:** 5/26/09

For Special Projects Use Only
QC Selection: _____ Date: _____
Date Package Review: _____ Date: _____
Date Package Mailed: _____ Date: _____

Special Instructions

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900123	270900123-0001	01 50mL	ash 1/2 filter	5/19/2009
270900123	270900123-0002	02 50mL	ash 1/2 filter	5/19/2009
270900123	270900123-0003	03 50mL	ash 1/2 filter	5/19/2009
270900123	270900123-0004	04 (10) 25 mL (2nd dil)	ash Full filter - loose material	5/19/2009
270900123	270900123-0005	05 25mL (2nd dil)	ash Full filter - loose material	5/19/2009
270900123	270900123-0006	06 (10) 25mL	ash Full filter - loose material	5/19/2009

(C-F)(G)
2709-EMR-49 ~~(D-F)~~ MM 5-26/09 2709-EMR-ARC-50 (B)(C)

EMSL ANALYTICAL, INC.
LABORATORY • PRODUCTS • TRAINING

Asbestos Chain of Custody

EMSL Order Number *(Lab Use Only)*:

EMSL ANALYTICAL, INC
107 HADDON AVENUE
WESTMONT, NJ 08108
PHONE: (856) 858-4800
FAX: (856) 858-4960

270900123

Company: EMR		**EMSL-Bill to:** ☐ Same ☐ Different If Bill to is Different note instructions in Comments**	
Street: 11 East Superior St Suite 260		*Third Party Billing requires written authorization from third party*	
City: Duluth	**State/Province:** MN	**Zip/Postal Code:** 55802	**Country:** USA
Report To (Name): Scot Carney		**Fax #:**	
Telephone #: (218) 625-2331		**Email Address:**	
Project Name/Number:			
Please Provide Results: ☐ Fax ☐ Email	**Purchase Order:**	**U.S. State Samples Taken:**	

Turnaround Time (TAT) Options* – Please Check

☐ 3 Hours ☐ 6 Hours ☒ 24 Hrs ☐ 48 Hrs ☐ 3 Days ☐ 4 Days ☐ 5 Days ☐ 10 Days

**For TEM Air 3 hours/6 hours, please call ahead to schedule.*There is a premium charge for 3 Hour TEM AHERA or EPA Level II TAT. You will be asked to sign an authorization form for this service. Analysis completed in accordance with EMSL's Terms and Conditions located in the Analytical Price Guide.*

PCM - Air
- ☐ NIOSH 7400
- ☐ w/ OSHA 8hr. TWA

PLM - Bulk (reporting limit)
- ☐ PLM EPA 600/R-93/116 (<1%)
- ☐ PLM EPA NOB (<1%)

Point Count
- ☐ 400 (<0.25%) ☐ 1000 (<0.1%)

Point Count w/Gravimetric
- ☐ 400 (<0.25%) ☐ 1000 (<0.1%)
- ☐ NYS 198.1 (friable in NY)
- ☐ NYS 198.6 NOB (non-friable-NY)
- ☐ NIOSH 9002 (<1%)

TEM - Air
- ☒ AHERA 40 CFR, Part 763
- ☐ NIOSH 7402
- ☐ EPA Level II
- ☐ ISO 10312

TEM - Bulk
- ☐ TEM EPA NOB
- ☐ NYS NOB 198.4 (non-friable-NY)
- ☐ Chatfield SOP
- ☐ TEM Mass Analysis-EPA 600 sec. 2.5

TEM – Water: EPA 100.2
- Fibers >10µm ☐ Waste ☐ Drinking
- All Fiber Sizes ☐ Waste ☐ Drinking

TEM- Dust
- ☐ Microvac - ASTM D 5755
- ☐ Wipe - ASTM D6480
- ☐ Carpet Sonication (EPA 600/J-93/167)

Soil/Rock/Vermiculite
- ☐ PLM CARB 435 - A (0.25% sensitivity)
- ☐ PLM CARB 435 - B (0.1% sensitivity)
- ☐ TEM CARB 435 - B (0.1% sensitivity)
- ☐ TEM CARB 435 - C (0.01% sensitivity)
- ☐ EPA Protocol (Semi-Quantitative)
- ☐ EPA Protocol (Quantitative)

Other:
- ☐

☐ **Check For Positive Stop – Clearly Identify Homogenous Group**

Samplers Name: Michael McKay **Samplers Signature:** Michael McKay

Sample #	Sample Description	Volume/Area (Air) HA # (Bulk)	Date/Time Sampled
01	Operator - Rex Hanna - Rail Machine	1584	5/19/09 07:19 - 16:55
02	Operator - Jesus Torra - Rail Machine	1590	5/19/09 07:20 - 16:58
03	Operator - Leroy Paulson. Rail Machine	1584	5/19/09 07:22 - 16:58
04	Duane Williams - Profiler - Rail Machine	1382	5/19/09 07:23 - 16:59
05	David Castro - Profiler - Rail Machine	1373	5/19/09 07:25 - 16:57
06	Keith Francis - Profiler - Rail Machine	1300	5/19/09 07:29 - 16:54

Client Sample # (s): 01 - 06 **Total # of Samples:** 6

Relinquished (Client): Michael McKay **Date:** 5/20/09 **Time:** 08:45

Received (Lab): R.K. Mahoney **Date:** 5/20/09 **Time:** 0845

Comments/Special Instructions:

Personal Air Sample Data
BNSF Kootenai River Subdivision
OSHA Sampling

Date: 5/19/09 Work Area Mileposts: 1307 - 1313 270900123

Sampled Person's Name:	Rex Hanna
BNSF Employee ID	7516762
Job Title	Operator
Machine Type	X5400457
Pump Number	1
Sample #	01
Starting Flow Rate	2.8
Sample Start Time	07:19
Ending Flow Rate	2.7
Sample End Time	16:55

Sampled Person's Name:	Jesus Tovra
BNSF Employee ID	5054390
Job Title	Operator
Machine Type	X5400457
Pump Number	2
Sample #	02
Starting Flow Rate	2.8
Sample Start Time	07:20
Ending Flow Rate	2.7
Sample End Time	16:58

Sampled Person's Name:	Leroy Paulson
BNSF Employee ID	2514925
Job Title	Operator
Machine Type	X5400457
Pump Number	3
Sample #	03
Starting Flow Rate	2.8
Sample Start Time	07:22
Ending Flow Rate	2.7
Sample End Time	16:58

Sampled Person's Name:	Duane Williams
BNSF Employee ID	4882486
Job Title	Operator
Machine Type	X900008
Pump Number	4
Sample #	04
Starting Flow Rate	2.4
Sample Start Time	07:23
Ending Flow Rate	2.4
Sample End Time	16:59

Personal Air Sample Data
BNSF Kootenai River Subdivision
OSHA Sampling

Date: 5/19/09 Work Area Mileposts: 1307 - 1313 27090012 3

Sampled Person's Name:	David Castro
BNSF Employee ID	7503923
Job Title	Profiler
Machine Type	X900008
Pump Number	5
Sample #	05
Starting Flow Rate	2.4
Sample Start Time	07:25
Ending Flow Rate	2.4
Sample End Time	16:57

Sampled Person's Name:	Keith Francis
BNSF Employee ID	1178722
Job Title	Profiler
Machine Type	X900008
Pump Number	6
Sample #	06
Starting Flow Rate	2.3
Sample Start Time	07:29
Ending Flow Rate	2.3
Sample End Time	16:54

Sampled Person's Name:	
BNSF Employee ID	
Job Title	
Machine Type	
Pump Number	
Sample #	
Starting Flow Rate	
Sample Start Time	
Ending Flow Rate	
Sample End Time	

Sampled Person's Name:	
BNSF Employee ID	
Job Title	
Machine Type	
Pump Number	
Sample #	
Starting Flow Rate	
Sample Start Time	
Ending Flow Rate	
Sample End Time	

EMSL ANALYTICAL, INC.
107 4TH STREET WEST
LIBBY, MONTANA 59923
TEL: 406-293-9066
FAX: 406-293-7016

RE: Sample preparation for 270900123 (BNSF-EMR)

The following samples (01, 02 & 03) were processed in the described method (M1):

M1 (1/2 filter used)

1. ½ of original filter sectioned for ashing.
2. Samples placed in LFE asher until filter has been completely ashed.
3. Ashed sample (AS) re-suspended in 100mL particle water.
4. Fractions filtered (10, 15, 25 & 50mL) on 0.2µm filter backed by 5.0µm
5. Selected volume processed to grids.

The following samples (04, 05 & 06) were processed in the described method (M2):

M2 (loose material)

1. Loose materials in cassette consolidated with overloaded filter were prepared for ashing.
2. Samples placed in LFE asher until filters have been completely ashed.
3. Ashed sample (AS) re-suspended in 100mL particle water.
4. Fractions filtered (10, 15, 25 & 50mL) on 0.2µm filter backed by 5.0µm. Samples 04 and 05 were processed through second dilution.
5. Selected volume processed to grids.

Please refer to SOP No.: EPA-LIBBY-08 for further information.

Indirect Preparation Record

INDIRECT PREPARATION RECORD
REVISION 1
FEBRUARY 9, 2009

TEM Air *TEM Dust* *PCM* EFA 360 (mm2)
(Circle One)

		Indirect without ashing			Dilution Filtration						Indirect with Ashing			
Prepped by: RSP	Date: 5/20/09	Fraction of filter used	1st Resuspend Volume	Volume applied to filter	Volume of 1st Resuspend used	2nd Re-suspend Volume	Volume applied to filter	Volume of 2nd Re-suspend used	3rd Re-suspend Volume	Volume applied to filter	Fraction of filter ashed	Volume used to resuspend residue	Volume applied to 2nd filter	OK to Prep to Grid?
Order ID	Sample #		mL	mL	mL	mL	mL	mL	mL	mL		mL	mL	Y/N
2709001123	01										1/2	100	10	
													15	
													25	
													50	Y
	02										1/2	100	10	
													15	
													25	
													50	Y
	03										1/2	100	10	
													15	
													25	
													50	Y
	04				10	100	(10) analyzed				1	100	10	Y
							15						80	
							25							Y
							50							
	05				10	100	10				1	100	10	
							15						80	
							(25)							Y
							50							

Indirect Preparation Record

INDIRECT PREPARATION RECORD
REVISION 1
FEBRUARY 9, 2009

TEM Air TEM Dust PCM EFA 360 (mm2)
(Circle One)

		Indirect without ashing			Dilution Filtration						Indirect with Ashing			
Prepped by: RMJ	Date: 5/20/09	Fraction of filter used	1st Resuspend Volume	Volume applied to filter	Volume of 1st Resuspend used	2nd Re-suspend Volume	Volume applied to filter	Volume of 2nd Re-suspend used	3rd Re-suspend Volume	Volume applied to filter	Fraction of filter ashed	Volume used to resuspend residue	Volume applied to 2nd filter	OK to Prep to Grid?
Order ID	Sample #		mL	mL	mL	mL	mL	mL	mL	mL		mL	mL	Y/N
2709001Z3	06										1	100	10	Y analyzed
													15	
													25	Y
													50	
	FB										-	100	100	Y
	AB										-	100	100	Y
	MB										-	100	100	Y

RMJ 8/26/09

EMSL ANALYTICAL, INC.
107 4TH STREET WEST
LIBBY, MONTANA 59923
TEL: 406-293-9066
FAX: 406-293-7016

RE: Sample preparation for 270900123 (BNSF-EMR)

The following samples (01, 02 & 03) were processed in the described method (M1):

M1 (1/2 filter used)

1. ½ of original filter sectioned for ashing.
2. Samples placed in LFE asher until filter has been completely ashed.
3. Ashed sample (AS) re-suspended in 100mL particle water.
4. Fractions filtered (10, 15, 25 & 50mL) on 0.2µm filter backed by 5.0µm
5. Selected volume processed to grids.

The following samples (04, 05 & 05) were processed in the described method (M2):

M2 (loose material)

1. Loose materials in cassette consolidated with overloaded filter were prepared for ashing.
2. Samples placed in LFE asher until filters have been completely ashed.
6. Ashed sample (AS) re-suspended in 100mL particle water.
7. Fractions filtered (10, 15, 25 & 50mL) on 0.2µm filter backed by 5.0µm. Samples 04 and 05 were processed through second dilution.
3. Selected volume processed to grids

Please refer to SOP No.: EPA-LIBBY-08 for further information.

INTERNAL SAMPLE CHAIN OF CUSTODY

5/20/2009 10:23:44 AM

Order ID: 270900123

Attn: Scott Carney
EMR, Inc.
11 East Superior Street
Suite 260
Duluth, MN 55802

Fax: (218) 625-2337 Phone: (218) 625-2332

Project: **Samples collected 5/19/2009**

Customer ID: EMRI78
Customer PO:
Received: 05/20/09 8:45 AM

EMSL Order: 270900123
EMSL Proj ID: BNSF 2009 OSHA
Cust COC ID

Test: TEM AHERA (Indirect) **Matrix:** Air **TAT:** 24 Hour **Qty:** 6

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900123	270900123-0001	01		5/19/2009

Comments:

ANALYZED:	*[signature]*	**Date:**	5/26/09
Preliminary Data Sent to Special Projects:		**Date:**	
Data Entry:		Date:	
Structure Review:		Date:	
Data Validation:		Date:	
Reported to Client:		Date:	

Micrographs:

	Micrograph Number	Type Diffraction or Morphology

INTERNAL SAMPLE CHAIN OF CUSTODY

5/20/2009 10:23:44 AM

Order ID: 270900123

Attn: Scott Carney
EMR, Inc.
11 East Superior Street
Suite 260
Duluth, MN 55802

Fax: (218) 625-2337 Phone: (218) 625-2332

Project: **Samples collected 5/19/2009**

Customer ID: EMRI78
Customer PO:
Received: 05/20/09 8:45 AM

EMSL Order: 270900123
EMSL Proj ID: BNSF 2009 OSHA
Cust COC ID

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900123	270900123-0002	02		5/19/2009

Comments:

ANALYZED:		**Date:**	5/20/09
Preliminary Data Sent to Special Projects:		**Date:**	
Data Entry:		Date:	
Structure Review:		Date:	
Data Validation:		Date:	
Reported to Client:		Date:	

Micrographs:

	Micrograph Number	Type Diffraction or Morphology

INTERNAL SAMPLE CHAIN OF CUSTODY

5/20/2009 10:23:44 AM

Order ID: 270900123

Attn: Scott Carney
EMR, Inc.
11 East Superior Street
Suite 260
Duluth, MN 55802

Fax: (218) 625-2337 Phone: (218) 625-2332

Project: **Samples collected 5/19/2009**

Customer ID: EMRI78
Customer PO:
Received: 05/20/09 8:45 AM

EMSL Order: 270900123
EMSL Proj ID: BNSF 2009 OSHA
Cust COC ID

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900123	270900123-0003	03		5/19/2009

Comments:

ANALYZED:	per	**Date:**	5/26/09
Preliminary Data Sent to Special Projects:		**Date:**	
Data Entry:		Date:	
Structure Review:		Date:	
Data Validation:		Date:	
Reported to Client:		Date:	

Micrographs:

	Micrograph Number	Type Diffraction or Morphology

INTERNAL SAMPLE CHAIN OF CUSTODY

5/20/2009 10:23:44 AM

Order ID: 270900123

Attn: Scott Carney
EMR, Inc.
11 East Superior Street
Suite 260
Duluth, MN 55802

Fax: (218) 625-2337 Phone: (218) 625-2332

Project: **Samples collected 5/19/2009**

Customer ID: EMRI78
Customer PO:
Received: 05/20/09 8:45 AM

EMSL Order: 270900123
EMSL Proj ID: BNSF 2009 OSHA
Cust COC ID

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900123	**270900123-0004**	**04**		**5/19/2009**

Comments:

ANALYZED:	[illegible]	**Date:**	5/27/09
Preliminary Data Sent to Special Projects:		**Date:**	
Data Entry:		Date:	
Structure Review:		Date:	
Data Validation:		Date:	
Reported to Client:		Date:	

Micrographs:

	Micrograph Number	Type Diffraction or Morphology

INTERNAL SAMPLE CHAIN OF CUSTODY

5/20/2009 10:23:44 AM

Order ID: 270900123

Attn: Scott Carney
EMR, Inc.
11 East Superior Street
Suite 260
Duluth, MN 55802

Fax: (218) 625-2337 Phone: (218) 625-2332

Project: **Samples collected 5/19/2009**

Customer ID: EMRI78
Customer PO:
Received: 05/20/09 8:45 AM

EMSL Order: 270900123
EMSL Proj ID: BNSF 2009 OSHA
Cust COC ID

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900123	270900123-0005	05		5/19/2009

Comments:

ANALYZED:	[signature]	**Date:**	5/26/09
Preliminary Data Sent to Special Projects:		**Date:**	
Data Entry:		Date:	
Structure Review:		Date:	
Data Validation:		Date:	
Reported to Client:		Date:	

Micrographs:

	Micrograph Number	Type Diffraction or Morphology

INTERNAL SAMPLE CHAIN OF CUSTODY

5/20/2009 10:23:44 AM

Order ID: 270900123

Attn: Scott Carney
EMR, Inc.
11 East Superior Street
Suite 260
Duluth, MN 55802

Fax: (218) 625-2337 Phone: (218) 625-2332

Project: **Samples collected 5/19/2009**

Customer ID: EMRI78
Customer PO:
Received: 05/20/09 8:45 AM

EMSL Order: 270900123
EMSL Proj ID: BNSF 2009 OSHA
Cust COC ID

Order ID	Lab Sample #	Cust. Sample #	Location	Due Date
270900123	270900123-0006	06		5/19/2009

Comments:

ANALYZED:	[signature]	**Date:**	5/27/09
Preliminary Data Sent to Special Projects:		**Date:**	
Data Entry:		Date:	
Structure Review:		Date:	
Data Validation:		Date:	
Reported to Client:		Date:	

Micrographs:

	Micrograph Number	Type Diffraction or Morphology

EMSL Analytical, Inc.
107 West 4th Street, Libby, MT 59923
Phone: (406) 293-9066 Fax: Email: mobileasbestoslab@emsl.com

Attn: **Scott Carney**
EMR, Inc.
11 East Superior Street
Suite 260
Duluth, MN 55802

Fax: (218) 625-2337 Phone: (218) 625-2332
Project: **Samples collected 5/19/2009**

Customer ID: EMRI78
Customer PO:
Received: 05/20/09 8:45 AM
EMSL Order: 270900123

EMSL Proj: BNSF 2009 OSHA
Analysis Date: 5/27/2009

Sampling Date: 5/19/2009

Asbestos Fiber Analysis by Transmission Electron Microscopy (TEM) Performed by AHERA -EPA 40 CFR Part 763 Appendix A to Subpart E (Modified for Indirect Prep)

Sample	*Location*	*Volume (Liters)*	*Area Analyzed (mm²)*	*Non Asb*	*Asbestos Type(s)*	*# Structures* ≥ 0.5μ < 5μ	*# Structures* ≥5μ	*Analytical Sensitivity (S/cc)*	*Total Asbestos Concentration (S/mm²)*	*Total Asbestos Concentration (S/cc)*
01 *270900123-0001*		1584.00	0.1300		None Detected			0.0070	**<29.00**	**<0.0070**
02 *270900123-0002*		1590.00	0.1300		None Detected			0.0070	**<29.00**	**<0.0070**
03 *270900123-0003*		1584.00	0.1300		None Detected			0.0070	**<29.00**	**<0.0070**
04 *270900123-0004*		1382.00	0.1300		None Detected			0.2000	**<720.00**	**<0.2000**
05 *270900123-0005*		1373.00	0.1300		None Detected			0.0810	**<290.00**	**<0.0810**
06 *270900123-0006*		1300.00	0.1300		None Detected			0.0850	**<290.00**	**<0.0850**

Analyst(s)

Roy Pescador (6)

R. K. Mahoney, Laboratory Manager
or other approved signatory

BNSF 2009 OSHA
TEM Asbestos Structure Count

Laboratory name:	EMSL27
Instrument	JEOL 100 CX II(27-2)
Voltage (KV)	100
Magnification	19,000 X
Grid opening area (mm2)	0.013
Scale: 1L =	1
Scale: 1D =	1
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	360
Category (Field, Rep., Dup., Blank)	Field
Primary filter pore size (um)	0.8

EPA Sample Number:	01
Sample Type (A=Air, D=Dust, DF = Dustfall):	A
Air volume (L), dust area (cm2), or dustfall container area (cm2)	1384
Date received by lab	5/20/2009
Lab Job Number:	270900123
Lab Sample Number:	270900123-0001
Number of grids prepared	
Prepared by	
Preparation date	
EPA COC Number:	5/19/2009
Secondary filter pore size (um)	0.2

Analyzed by	
Analysis date	
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
If sample type = air, is there loose material or debris in the cowl? (Yes, No)	No
Counting rules (ISO, AHERA, ASTM)	AHERA
Grid storage location	
Archive filter(s) storage location	Westmont
QA Type (Not QA, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interlab)	Not QA

F-Factor Calculation (Indirect Preps Only):

Enter data in appropriate cells provided to the right----->

Recording Rules:

Minimum Aspect Ratio (circle one):

none ≥ 3:1 (≥ 5:1)

Minimum Length (um):	0.5
Minimum Width (um):	None

Stopping Rules:

Target Sensitivity:	0.005
Max # of GOs:	4
Target # of Structures:	

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		Identification	Mineral Class (see below)				Sketch/ Comments	1 = yes, blank = no			Fract. GO Chrys.
			Primary	Total	Length	Width		LA	OA	C	NAM		Sketch	Photo	EDS	
			OVERLOADED													

LA = Libby-type amphibole OA = Other (non-Libby type) amphibole C = Chrysotile NAM = Non-asbestos material

F-factor Calculation:

Indirect Prep Inputs

	Fraction of primary filter used for indirect prep or ashing *[For dust and dustfall, enter 1.0]*
	First resuspension volume or rinsate volume (mL)
	Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

	Second resuspension volume (mL)
	Volume applied to secondary filter (mL) or used for serial dilution
	Third resuspension volume (mL)
	Volume applied to secondary filter (mL)

Input for Ashing of Secondary Filter

	Fraction of secondary filter used for ashing

Grid opening traverse direction (circle one):

H Horizontal

V Vertical

Are prepped grids acceptable for analysis? (circle one) Yes No

If No, explain:

BNSF 2009 OSHA
TEM Asbestos Structure Count

Laboratory name:	EMSL27
Instrument	JEOL 100 CX (27-1)
Voltage (KV)	100
Magnification	19,000 X
Grid opening area (mm2)	0.013
Scale: 1L =	1
Scale: 1D =	1
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	360
Category (Field, Rep., Dup., Blank)	Field
Primary filter pore size (um)	0.8

EPA Sample Number:	01
Sample Type (A=Air, D=Dust, DF = Dustfall):	A
Air volume (L), dust area (cm2), or dustfall container area (cm2)	1584
Date received by lab	5/20/2009
Lab Job Number:	270900123
Lab Sample Number:	270900123-0001
Number of grids prepared	3
Prepared by	R. Pescador
Preparation date	5/26/2009
EPA COC Number:	5/19/2009
Secondary filter pore size (um)	0.2

Analyzed by	R. Pescador
Analysis date	5/26/2009
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	IA
If sample type = air, is there loose material or debris in the cowl? (Yes, No)	No
Counting rules (ISO, AHERA, ASTM)	AHERA
Grid storage location	2709-EMR-49, C
Archive filter(s) storage location	Westmont
QA Type (Not QA, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interlab)	Not QA

F-Factor Calculation (Indirect Preps Only):

Enter data in appropriate cells provided to the right----->

Recording Rules:

Minimum Aspect Ratio (circle one): none ≥ 3:1 (≥ 5:1)

Minimum Length (um):	0.5
Minimum Width (um):	None

Stopping Rules:

Target Sensitivity:	0.005
Max # of GOs:	10
Target # of Structures:	

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		Identification	Mineral Class (see below)				Sketch/ Comments	1 = yes, blank = no			Fract. GO Chrys.
			Primary	Total	Length	Width		LA	OA	C	NAM		Sketch	Photo	EDS	
1	E3	ND														
	E5	ND														
	E7	ND														
	E9	ND														
	B6	ND														
	B8	ND														
	B10	ND														
2	A7	ND														
	A5	ND														
	H4	ND														

F-factor Calculation:

Indirect Prep Inputs

0.5	Fraction of primary filter used for indirect prep or ashing *[For dust and dustfall, enter 1.0]*
100	First resuspension volume or rinsate volume (mL)
50	Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

	Second resuspension volume (mL)
	Volume applied to secondary filter (mL) or used for serial dilution
	Third resuspension volume (mL)
	Volume applied to secondary filter (mL)

Input for Ashing of Secondary Filter

	Fraction of secondary filter used for ashing

LA = Libby-type amphibole OA = Other (non-Libby type) amphibole C = Chrysotile NAM = Non-asbestos material

Grid opening traverse direction (circle one):

H Horizontal

(V) Vertical

Are prepped grids acceptable for analysis? (circle one) (Yes) No

If No, explain:

BNSF 2009 OSHA
TEM Asbestos Structure Count

Laboratory name:	EMSL27
Instrument	JEOL 100 CX II(27-2)
Voltage (KV)	100
Magnification	19,000 X
Grid opening area (mm2)	0.013
Scale: 1L =	1
Scale: 1D =	1
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	360
Category (Field, Rep., Dup., Blank)	Field
Primary filter pore size (um)	0.8

EPA Sample Number:	02
Sample Type (A=Air, D=Dust, DF = Dustfall):	A
Air volume (L), dust area (cm2), or dustfall container area (cm2)	1590
Date received by lab	5/20/2009
Lab Job Number:	270900123
Lab Sample Number:	270900123-0002
Number of grids prepared	
Prepared by	
Preparation date	
EPA COC Number:	5/19/2009
Secondary filter pore size (um)	0.2

Analyzed by	
Analysis date	
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
If sample type = air, is there loose material or debris in the cowl? (Yes, No)	No
Counting rules (ISO, AHERA, ASTM)	AHERA
Grid storage location	
Archive filter(s) storage location	Westmont
QA Type (Not QA, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interlab)	Not QA

F-Factor Calculation (Indirect Preps Only):

Enter data in appropriate cells provided to the right----->

Recording Rules:	
Minimum Aspect Ratio (circle one):	none ≥3:1 (≥5:1)
Minimum Length (um):	0.5
Minimum Width (um):	None

Stopping Rules:	
Target Sensitivity:	0.005
Max # of GOs:	4
Target # of Structures:	

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		Identification	Mineral Class (see below)				Sketch/ Comments	1 = yes, blank = no			Fract. GO Chrys.
			Primary	Total	Length	Width		LA	OA	C	NAM		Sketch	Photo	EDS	
		OVERLOADED														

F-factor Calculation:

Indirect Prep Inputs

- Fraction of primary filter used for indirect prep or ashing *[For dust and dustfall, enter 1.0]*
- First resuspension volume or rinsate volume (mL)
- Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

- Second resuspension volume (mL)
- Volume applied to secondary filter (mL) or used for serial dilution
- Third resuspension volume (mL)
- Volume applied to secondary filter (mL)

Input for Ashing of Secondary Filter

- Fraction of secondary filter used for ashing

LA = Libby-type amphibole OA = Other (non-Libby type) amphibole C = Chrysotile NAM = Non-asbestos material

Grid opening traverse direction (circle one):

H Horizontal

V Vertical

Are prepped grids acceptable for analysis? (circle one) Yes No

If No, explain:

BNSF 2009 OSHA
TEM Asbestos Structure Count

Laboratory name:	EMSL27
Instrument	JEOL 100 CX (27-1)
Voltage (KV)	100
Magnification	19,000 X
Grid opening area (mm2)	0.013
Scale: 1L =	1
Scale: 1D =	1
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	360
Category (Field, Rep., Dup., Blank)	Field
Primary filter pore size (um)	0.8

EPA Sample Number:	02
Sample Type (A=Air, D=Dust, DF = Dustfall):	A
Air volume (L), dust area (cm2), or dustfall container area (cm2)	1590
Date received by lab	5/20/2009
Lab Job Number:	270900123
Lab Sample Number:	270900123-0002
Number of grids prepared	3
Prepared by	R. Pescador
Preparation date	5/26/2009
EPA COC Number:	5/19/2009
Secondary filter pore size (um)	0.2

Analyzed by	R. Pescador
Analysis date	5/26/2009
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	IA
If sample type = air, is there loose material or debris in the cowl? (Yes, No)	No
Counting rules (ISO, AHERA, ASTM)	AHERA
Grid storage location	2709-EMR-49, C
Archive filter(s) storage location	Westmont
QA Type (Not QA, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interlab)	Not QA

F-Factor Calculation (Indirect Preps Only):

Enter data in appropriate cells provided to the right----->

Recording Rules:

Minimum Aspect Ratio (circle one): none ≥ 3:1 (≥ 5:1)

Minimum Length (um): 0.5

Minimum Width (um): None

Stopping Rules:

Target Sensitivity: 0.005

Max # of GOs: 10

Target # of Structures:

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		Identification	Mineral Class (see below)				Sketch/ Comments	1 = yes, blank = no			Fract. GO Chrys.
			Primary	Total	Length	Width		LA	OA	C	NAM		Sketch	Photo	EDS	
1	D7	ND														
	D5	ND														
	D3	ND														
	D1	ND														
	G2	ND														
2	I4	ND														
	I6	ND														
	I8	ND														
	I10	ND														
	E9	ND														

F-factor Calculation:

Indirect Prep Inputs

0.50	Fraction of primary filter used for indirect prep or ashing *[For dust and dustfall, enter 1.0]*
100	First resuspension volume or rinsate volume (mL)
50	Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

	Second resuspension volume (mL)
	Volume applied to secondary filter (mL) or used for serial dilution
	Third resuspension volume (mL)
	Volume applied to secondary filter (mL)

Input for Ashing of Secondary Filter

	Fraction of secondary filter used for ashing

LA = Libby-type amphibole OA = Other (non-Libby type) amphibole C = Chrysotile NAM = Non-asbestos material

Grid opening traverse direction (circle one):

H Horizontal

(V) Vertical

Are prepped grids acceptable for analysis? (circle one) (Yes) No

If No, explain:

BNSF 2009 OSHA
TEM Asbestos Structure Count

Laboratory name:	EMSL27
Instrument	JEOL 100 CX II(27-2)
Voltage (KV)	100
Magnification	19,000 X
Grid opening area (mm2)	0.013
Scale: 1L =	1
Scale: 1D =	1
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	360
Category (Field, Rep., Dup., Blank)	Field
Primary filter pore size (um)	0.8

EPA Sample Number:	03
Sample Type (A=Air, D=Dust, DF = Dustfall):	A
Air volume (L), dust area (cm2), or dustfall container area (cm2)	1.58
Date received by lab	5/20/2009
Lab Job Number:	270900123
Lab Sample Number:	270900123-0003
Number of grids prepared	
Prepared by	
Preparation date	
EPA COC Number:	5/19/2009
Secondary filter pore size (um)	0.2

Analyzed by	
Analysis date	
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
If sample type = air, is there loose material or debris in the cowl? (Yes, No)	No
Counting rules (ISO, AHERA, ASTM)	AHERA
Grid storage location	
Archive filter(s) storage location	Westmont
QA Type (Not QA, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interlab)	Not QA

F-Factor Calculation (Indirect Preps Only):

Enter data in appropriate cells provided to the right----->

Recording Rules:

Minimum Aspect Ratio (circle one):

none ≥3:1 (≥5:1)

Minimum Length (um):	0.5
Minimum Width (um):	None

Stopping Rules:

Target Sensitivity:	0.005
Max # of GOs:	4
Target # of Structures:	

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		Identification	Mineral Class (see below)				Sketch/ Comments	1 = yes, blank = no			Fract. GO Chrys.
			Primary	Total	Length	Width		LA	OA	C	NAM		Sketch	Photo	EDS	
			OVERLOADED													

LA = Libby-type amphibole OA = Other (non-Asbestos material) C = Chrysotile NAM = Non-asbestos material

F-factor Calculation:

Indirect Prep Inputs

	Fraction of primary filter used for indirect prep or ashing *[For dust and dustfall, enter 1.0]*
	First resuspension volume or rinsate volume (mL)
	Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

	Second resuspension volume (mL)
	Volume applied to secondary filter (mL) or used for serial dilution
	Third resuspension volume (mL)
	Volume applied to secondary filter (mL)

Input for Ashing of Secondary Filter

	Fraction of secondary filter used for ashing

Grid opening traverse direction (circle one):

H Horizontal

V Vertical

Are prepped grids acceptable for analysis? (circle one) Yes No

If No, explain:

BNSF 2009 OSHA
TEM Asbestos Structure Count

Laboratory name:	EMSL27
Instrument	JEOL 100 CX (27-1)
Voltage (KV)	100
Magnification	19,000 X
Grid opening area (mm2)	0.013
Scale: 1L =	1
Scale: 1D =	1
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	360
Category (Field, Rep., Dup., Blank)	Field
Primary filter pore size (um)	0.8

EPA Sample Number:	03
Sample Type (A=Air, D=Dust, DF = Dustfall):	A
Air volume (L), dust area (cm2), or dustfall container area (cm2)	1584
Date received by lab	5/20/2009
Lab Job Number:	270900123
Lab Sample Number:	270900123-0003
Number of grids prepared	3
Prepared by	R. Pescador
Preparation date	5/26/2009
EPA COC Number:	5/19/2009
Secondary filter pore size (um)	0.2

Analyzed by	R. Pescador
Analysis date	5/26/2009
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	IA
If sample type = air, is there loose material or debris in the cowl? (Yes, No)	No
Counting rules (ISO, AHERA, ASTM)	AHERA
Grid storage location	2709-EMR-49, C
Archive filter(s) storage location	Westmont
QA Type (Not QA, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interlab)	Not QA

F-Factor Calculation (Indirect Preps Only):

Enter data in appropriate cells provided to the right----->

Recording Rules:

Minimum Aspect Ratio (circle one):

none ≥ 3:1 (≥ 5:1)

Minimum Length (um):	0.5
Minimum Width (um):	None

Stopping Rules:

Target Sensitivity:	0.005
Max # of GOs:	10
Target # of Structures:	

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		Identification	Mineral Class (see below)				Sketch/ Comments	1 = yes, blank = no			Fract. GO Chrys.
			Primary	Total	Length	Width		LA	OA	C	NAM		Sketch	Photo	EDS	
1	C9	ND														
	C7	ND														
	C5	ND														
	C3	ND														
	C1	ND														
2	B9	ND														
	B7	ND														
	B5	ND														
	B3	ND														
	B1	ND														

F-factor Calculation:

Indirect Prep Inputs

0.50	Fraction of primary filter used for indirect prep or ashing *[For dust and dustfall, enter 1.0]*
100	First resuspension volume or rinsate volume (mL)
50	Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

	Second resuspension volume (mL)
	Volume applied to secondary filter (mL) or used for serial dilution
	Third resuspension volume (mL)
	Volume applied to secondary filter (mL)

Input for Ashing of Secondary Filter

	Fraction of secondary filter used for ashing

LA = Libby-type amphibole OA = Other (non-Libby type) amphibole C = Chrysotile NAM = Non-asbestos material

Grid opening traverse direction (circle one):

H Horizontal

(V) Vertical

Are prepped grids acceptable for analysis? (circle one) (Yes) No

If No, explain:

BNSF 2009 OSHA
TEM Asbestos Structure Count

Laboratory name:	EMSL27
Instrument	JEOL 100 CX II(27-2)
Voltage (KV)	100
Magnification	19,000 X
Grid opening area (mm2)	0.013
Scale: 1L =	1
Scale: 1D =	1
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	360
Category (Field, Rep., Dup., Blank)	Field
Primary filter pore size (um)	0.8

EPA Sample Number:	04
Sample Type (A=Air, D=Dust, DF = Dustfall):	A
Air volume (L), dust area (cm2), or dustfall container area (cm2)	1382
Date received by lab	5/20/2009
Lab Job Number:	270900123
Lab Sample Number:	270900123-0004
Number of grids prepared	
Prepared by	
Preparation date	
EPA COC Number:	5/19/2009
Secondary filter pore size (um)	0.2

Analyzed by	
Analysis date	
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
If sample type = air, is there loose material or debris in the cowl? (Yes, No)	Yes
Counting rules (ISO, AHERA, ASTM)	AHERA
Grid storage location	
Archive filter(s) storage location	Westmont
QA Type (Not QA, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interlab)	Not QA

F-Factor Calculation (Indirect Preps Only):

Enter data in appropriate cells provided to the right---->

Recording Rules:

Minimum Aspect Ratio (circle one):

none ≥ 3:1 (≥ 5:1)

Minimum Length (um): 0.5

Minimum Width (um): None

Stopping Rules:

Target Sensitivity: 0.005

Max # of GOs: 5

Target # of Structures:

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		Identification	Mineral Class (see below)				Sketch/ Comments	1 = yes, blank = no			Fract. GO Chrys.
			Primary	Total	Length	Width		LA	OA	C	NAM		Sketch	Photo	EDS	
		OVERLOADED &					LOOSE	MATERIAL								

F-factor Calculation:

Indirect Prep Inputs

- Fraction of primary filter used for indirect prep or ashing *[For dust and dustfall, enter 1.0]*
- First resuspension volume or rinsate volume (mL)
- Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

- Second resuspension volume (mL)
- Volume applied to secondary filter (mL) or used for serial dilution
- Third resuspension volume (mL)
- Volume applied to secondary filter (mL)

Input for Ashing of Secondary Filter

- Fraction of secondary filter used for ashing

LA = Libby-type amphibole OA = Other (non-Libby type) amphibole C = Chrysotile NAM = Non-asbestos material

Grid opening traverse direction (circle one):

H Horizontal

V Vertical

Are prepped grids acceptable for analysis? (circle one) Yes No

If No, explain:

BNSF 2009 OSHA
TEM Asbestos Structure Count

Laboratory name:	EMSL27
Instrument	JEOL 100 CX(1)(27-2)
Voltage (KV)	100
Magnification	19,000 X
Grid opening area (mm2)	0.013
Scale: 1L =	1
Scale: 1D =	1
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	360
Category (Field, Rep., Dup., Blank)	Field
Primary filter pore size (um)	0.8

EPA Sample Number:	04
Sample Type (A=Air, D=Dust, DF = Dustfall):	A
Air volume (L), dust area (cm2), or dustfall container area (cm2)	1382
Date received by lab	5/20/2009
Lab Job Number:	270900123
Lab Sample Number:	270900123-0004
Number of grids prepared	3
Prepared by	R. Pescador
Preparation date	5/26/2009
EPA COC Number:	5/19/2009
Secondary filter pore size (um)	0.2

Analyzed by	R. Pescador
Analysis date	5/27/2009
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	I A
If sample type = air, is there loose material or debris in the cowl? (Yes, No)	~~No~~ Yes MRY 5/27/09
Counting rules (ISO, AHERA, ASTM)	AHERA
Grid storage location	2709-EMR-49, G MRY 5/27/09
Archive filter(s) storage location	Westmont
QA Type (Not QA, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interlab)	Not QA

F-Factor Calculation (Indirect Preps Only):

Enter data in appropriate cells provided to the right----->

Recording Rules:

Minimum Aspect Ratio (circle one): none ≥ 3:1 (≥ 5:1)

Minimum Length (um):	0.5
Minimum Width (um):	None

Stopping Rules:

Target Sensitivity:	0.005
Max # of GOs:	10
Target # of Structures:	

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		Identification	Mineral Class (see below)				Sketch/ Comments	1 = yes, blank = no			Fract. GO Chrys.
			Primary	Total	Length	Width		LA	OA	C	NAM		Sketch	Photo	EDS	
1	I1	ND														
	I3	ND														
	I5	ND														
	I7	ND														
	I9	ND														
2	D10	ND														
	D8	ND														
	D6	ND														
	D4	ND														
	D2	ND														

F-factor Calculation:

Indirect Prep Inputs

1.0	Fraction of primary filter used for indirect prep or ashing *[For dust and dustfall, enter 1.0]*
100	First resuspension volume or rinsate volume (mL)
10	Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

100	Second resuspension volume (mL)
10 ~~25~~	Volume applied to secondary filter (mL) or used for serial dilution MRY 5/22/09
	Third resuspension volume (mL)
	Volume applied to secondary filter (mL)

Input for Ashing of Secondary Filter

	Fraction of secondary filter used for ashing

LA = Libby-type amphibole OA = Other (non-Libby type) amphibole C = Chrysotile NAM = Non-asbestos material

Grid opening traverse direction (circle one):
H Horizontal
(V) Vertical

Are prepped grids acceptable for analysis? (circle one) (Yes) No

If No, explain:

BNSF 2009 OSHA
TEM Asbestos Structure Count

Laboratory name:	EMSL27
Instrument	JEOL 100 CX II(27-2)
Voltage (KV)	100
Magnification	19,000 X
Grid opening area (mm2)	0.013
Scale: 1L =	1
Scale: 1D =	1
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	360
Category (Field, Rep., Dup., Blank)	Field
Primary filter pore size (um)	0.8

EPA Sample Number:	05
Sample Type (A=Air, D=Dust, DF = Dustfall):	A
Air volume (L), dust area (cm2), or dustfall container area (cm2)	1373
Date received by lab	5/20/2009
Lab Job Number:	270900123
Lab Sample Number:	270900123-0005
Number of grids prepared	
Prepared by	
Preparation date	
EPA COC Number:	5/19/2009
Secondary filter pore size (um)	0.2

Analyzed by	
Analysis date	
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
If sample type = air, is there loose material or debris in the cowl? (Yes, No)	Yes
Counting rules (ISO, AHERA, ASTM)	AHERA
Grid storage location	
Archive filter(s) storage location	Westmont
QA Type (Not QA, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interlab)	Not QA

F-Factor Calculation (Indirect Preps Only):

Enter data in appropriate cells provided to the right----->

Recording Rules:	
Minimum Aspect Ratio (circle one):	none ≥ 3:1 (≥ 5:1)
Minimum Length (um):	0.5
Minimum Width (um):	None

Stopping Rules:	
Target Sensitivity:	0.005
Max # of GOs:	5
Target # of Structures:	

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		Identification	Mineral Class (see below)				Sketch/ Comments	1 = yes, blank = no			Fract. GO Chrys.
			Primary	Total	Length	Width		LA	OA	C	NAM		Sketch	Photo	EDS	
		OVERLOADED # LOOSE MATERIAL														

LA = Libby-type amphibole OA = Other (non-Libby type) amphibole C = Chrysotile NAM = Non-asbestos material

F-factor Calculation:

Indirect Prep Inputs

- Fraction of primary filter used for indirect prep or ashing *[For dust and dustfall, enter 1.0]*
- First resuspension volume or rinsate volume (mL)
- Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

- Second resuspension volume (mL)
- Volume applied to secondary filter (mL) or used for serial dilution
- Third resuspension volume (mL)
- Volume applied to secondary filter (mL)

Input for Ashing of Secondary Filter

- Fraction of secondary filter used for ashing

Grid opening traverse direction (circle one):

H Horizontal

V Vertical

Are prepped grids acceptable for analysis? (circle one) Yes No

If No, explain:

BNSF 2009 OSHA
TEM Asbestos Structure Count

Laboratory name:	EMSL27
Instrument	JEOL 100 CX (27-1)
Voltage (KV)	100
Magnification	19,000 X
Grid opening area (mm2)	0.013
Scale: 1L =	1
Scale: 1D =	1
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	360
Category (Field, Rep., Dup., Blank)	Field
Primary filter pore size (um)	0.8

EPA Sample Number:	05
Sample Type (A=Air, D=Dust, DF = Dustfall):	A
Air volume (L), dust area (cm2), or dustfall container area (cm2)	1373
Date received by lab	5/20/2009
Lab Job Number:	270900123
Lab Sample Number:	270900123-0005
Number of grids prepared	3
Prepared by	R. Pescador
Preparation date	5/26/2009
EPA COC Number:	5/19/2009
Secondary filter pore size (um)	0.2

Analyzed by	R. Pescador
Analysis date	5/26/2009
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	I A
If sample type = air, is there loose material or debris in the cowl? (Yes, No)	Yes / No pmv 5/27/09
Counting rules (ISO, AHERA, ASTM)	AHERA
Grid storage location	2709-EMR-49, D
Archive filter(s) storage location	Westmont
QA Type (Not QA, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interlab)	Not QA

F-Factor Calculation (Indirect Preps Only):

Enter data in appropriate cells provided to the right---->

Recording Rules:

Minimum Aspect Ratio (circle one): none / ≥ 3:1 / (≥ 5:1)

Minimum Length (um):	0.5
Minimum Width (um):	None

Stopping Rules:

Target Sensitivity:	0.005
Max # of GOs:	10
Target # of Structures:	

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		Identification	Mineral Class (see below)				Sketch/ Comments	1 = yes, blank = no			Fract. GO Chrys.
			Primary	Total	Length	Width		LA	OA	C	NAM		Sketch	Photo	EDS	
1	C9	ND														
	C7	ND														
	C5	ND														
	C3	ND														
	C1	ND														
2	D10	ND														
	D8	ND														
	D6	ND														
	D4	ND														
	D2	ND														

F-factor Calculation:

Indirect Prep Inputs

1.0	Fraction of primary filter used for indirect prep or ashing *[For dust and dustfall, enter 1.0]*
100	First resuspension volume or rinsate volume (mL)
10	Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

100	Second resuspension volume (mL)
25	Volume applied to secondary filter (mL) or used for serial dilution
	Third resuspension volume (mL)
	Volume applied to secondary filter (mL)

Input for Ashing of Secondary Filter

	Fraction of secondary filter used for ashing

LA = Libby-type amphibole OA = Other (non-Libby type) amphibole C = Chrysotile NAM = Non-asbestos material

Grid opening traverse direction (circle one):
H Horizontal
(V) Vertical

Are prepped grids acceptable for analysis? (circle one) (Yes) No

If No, explain:

BNSF 2009 OSHA
TEM Asbestos Structure Count

Laboratory name:	EMSL27
Instrument	JEOL 100 CX II(27-2)
Voltage (KV)	100
Magnification	19,000 X
Grid opening area (mm2)	0.013
Scale: 1L =	1
Scale: 1D =	1
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	360
Category (Field, Rep., Dup., Blank)	Field
Primary filter pore size (um)	0.8

EPA Sample Number:	06
Sample Type (A=Air, D=Dust, DF = Dustfall):	A
Air volume (L), dust area (cm2), or dustfall container area (cm2)	1300
Date received by lab	5/20/2009
Lab Job Number:	270900123
Lab Sample Number:	270900123-0006
Number of grids prepared	
Prepared by	
Preparation date	
EPA COC Number:	5/19/2009
Secondary filter pore size (um)	0.2

Analyzed by	
Analysis date	
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	D
If sample type = air, is there loose material or debris in the cowl? (Yes, No)	Yes
Counting rules (ISO, AHERA, ASTM)	AHERA
Grid storage location	
Archive filter(s) storage location	Westmont
QA Type (Not QA, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interlab)	Not QA

F-Factor Calculation (Indirect Preps Only):

Enter data in appropriate cells provided to the right---->

Recording Rules:

Minimum Aspect Ratio (circle one): none ≥ 3:1 (≥ 5:1)

Minimum Length (um):	0.5
Minimum Width (um):	None

Stopping Rules:

Target Sensitivity:	0.005
Max # of GOs:	5
Target # of Structures:	

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		Identification	Mineral Class (see below)				Sketch/ Comments	1 = yes, blank = no			Fract. GO Chrys.
			Primary	Total	Length	Width		LA	OA	C	NAM		Sketch	Photo	EDS	
		OVERLOADED & LOOSE MATERIAL														

LA = Libby-type amphibole OA = Other (non-Libby type) amphibole C = Chrysotile NAM = Non-asbestos material

F-factor Calculation:

Indirect Prep Inputs

	Fraction of primary filter used for indirect prep or ashing *[For dust and dustfall, enter 1.0]*
	First resuspension volume or rinsate volume (mL)
	Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

	Second resuspension volume (mL)
	Volume applied to secondary filter (mL) or used for serial dilution
	Third resuspension volume (mL)
	Volume applied to secondary filter (mL)

Input for Ashing of Secondary Filter

	Fraction of secondary filter used for ashing

Grid opening traverse direction (circle one):

H Horizontal

V Vertical

Are prepped grids acceptable for analysis? (circle one) Yes No

If No, explain:

BNSF 2009 OSHA
TEM Asbestos Structure Count

Laboratory name:	EMSL27
Instrument	JEOL 100 CXII (272)
Voltage (KV)	100
Magnification	19,000 X
Grid opening area (mm2)	0.013
Scale: 1L =	1
Scale: 1D =	1
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	360
Category (Field, Rep., Dup., Blank)	Field
Primary filter pore size (um)	0.8

EPA Sample Number:	06
Sample Type (A=Air, D=Dust, DF = Dustfall):	A
Air volume (L), dust area (cm2), or dustfall container area (cm2)	1300
Date received by lab	5/20/2009
Lab Job Number:	270900123
Lab Sample Number:	270900123-0006
Number of grids prepared	3
Prepared by	R. Pescador
Preparation date	5/26/2009
EPA COC Number:	5/19/2009
Secondary filter pore size (um)	0.2

Analyzed by	R. Pescador
Analysis date	5/27/2009
Method (D=Direct, I=Indirect, IA=Indirect, ashed)	I A
If sample type = air, is there loose material or debris in the cowl? (Yes, No)	~~Yes~~ No MW 5/29/09
Counting rules (ISO, AHERA, ASTM)	AHERA
Grid storage location	2709-EMR-49, D
Archive filter(s) storage location	Westmont
QA Type (Not QA, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interlab)	Not QA

F-Factor Calculation (Indirect Preps Only):

Enter data in appropriate cells provided to the right----->

Recording Rules:

Minimum Aspect Ratio (circle one):

none ≥ 3:1 (≥ 5:1)

Minimum Length (um):	0.5
Minimum Width (um):	None

Stopping Rules:

Target Sensitivity:	0.005
Max # of GOs:	10
Target # of Structures:	

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		Identification	Mineral Class (see below)				Sketch/ Comments	1 = yes, blank = no			Fract. GO Chrys.
			Primary	Total	Length	Width		LA	OA	C	NAM		Sketch	Photo	EDS	
1	F3	ND														
	F5	ND														
	D2	ND														
	D5	ND														
	D10	ND														
2	H10	ND														
	H8	ND														
	H6	ND														
	H4	ND														
	H2	ND														

LA = Libby-type amphibole OA = Other (non-Libby type) amphibole C = Chrysotile NAM = Non-asbestos material

F-factor Calculation:

Indirect Prep Inputs

1.0	Fraction of primary filter used for indirect prep or ashing *[For dust and dustfall, enter 1.0]*
100	First resuspension volume or rinsate volume (mL)
10	Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

	Second resuspension volume (mL)
	Volume applied to secondary filter (mL) or used for serial dilution
	Third resuspension volume (mL)
	Volume applied to secondary filter (mL)

Input for Ashing of Secondary Filter

	Fraction of secondary filter used for ashing

Grid opening traverse direction (circle one):

H Horizontal

(V) Vertical

Are prepped grids acceptable for analysis? (circle one) (Yes) No

If No, explain: